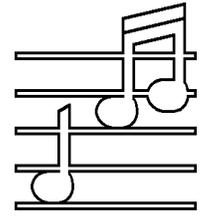


# AUDIO BASICS



A MONTHLY NEWSLETTER OF AUDIO INFORMATION  
VOLUME TWELVE NUMBER FIVE MAY, 1993

## The Omega II 200 – new lower priced state-of-the-art!

Because you purchased so many of our new amplifier designs this winter, and have been so happy with them, you have allowed us to produce even better than ever value for you. We are pleased to announce another brand new AVA product – the Omega II 200 amplifier at a new lower price – \$695.

Our Omega II 200 is a very carefully engineered mid-power design, making the most economical use of our brand new big amplifier chassis possible. It has a shielded toroid power transformer for dead quiet electrical operation. It uses our same new extruded striated high thermal efficiency heat sinks (two rather than four as with our bigger new amplifiers). It uses the same low noise, low impedance circuit board mounted power supply design (at a lower voltage). It features the same attention to output, ground and supply lead damping at the devices to insure superior stability and bandwidth. It uses four 100 watt rated TO-3 case Hitachi power mos-fets (two per channel). And of course it features our incredible 300 volt per microsecond slew rate active feedback audio circuits that simply have no peer at any price - they set the standards for transparency, definition, space, and absolute freedom from rough edges. These are the same circuits used in all our bigger Omega II amplifiers (not a single

one has been returned or failed) and the Omega II 200 is designed to have just as good a track record.

The Omega II 200 replaces the Dyna St-150 chassis based Omega II 240 and outperforms the old model in most respects at a new lower price. The Dyna 150 chassis are gone and we are happy to offer you this much nicer package now.

The heat sinks and mechanical and electrical layout are much better. The only aspect that went down a bit is supply voltage. The Dyna power transformer put out 63 volts DC; our new much quieter shielded toroid operates at 57 volts

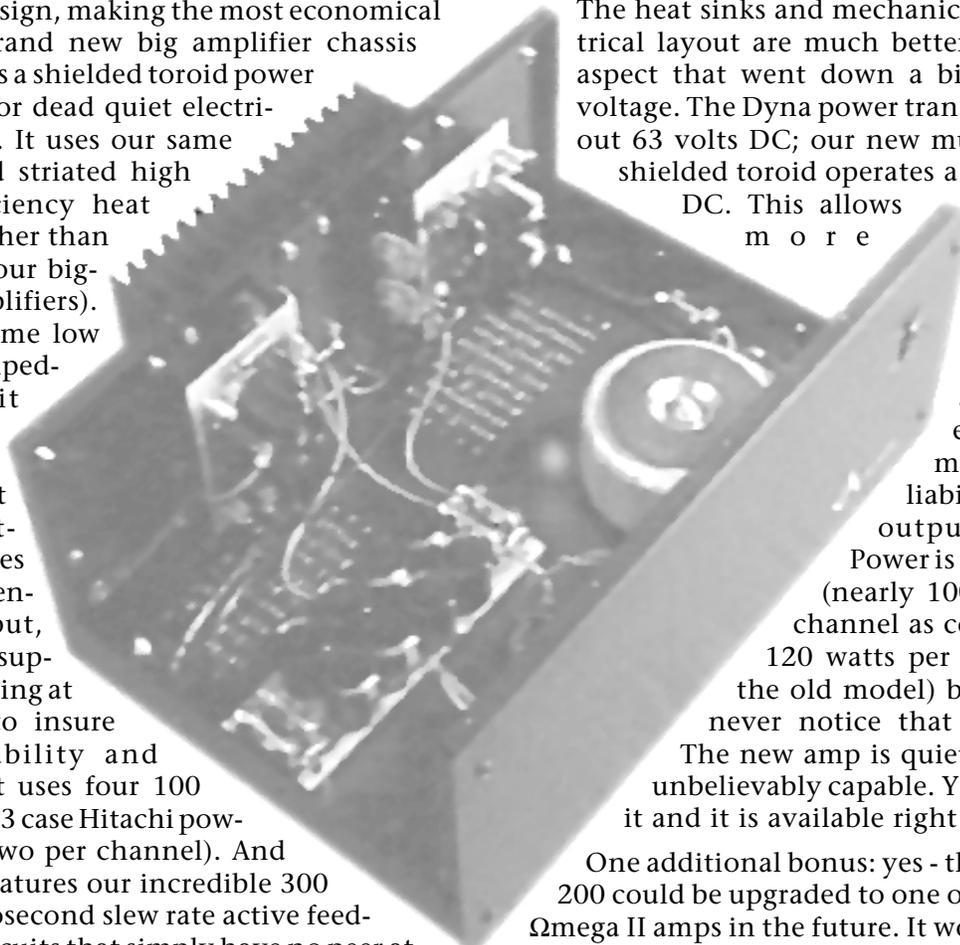
DC. This allows us to use more space efficient

power supply parts and allow an even greater margin of reliability in the output circuits.

Power is slightly less (nearly 100 watts per channel as compared to 120 watts per channel in the old model) but you will never notice that difference.

The new amp is quiet, cool, and unbelievably capable. You will love it and it is available right now.

One additional bonus: yes - the Omega II 200 could be upgraded to one of the bigger Omega II amps in the future. It would simply take a back panel, transformer, and power supply transplant. As time goes by we will offer this service if it proves to be an economical option for you. Enjoy!



## Now for something a little different.

We are going to continue with our nuts and bolts discussion of the design process of the new amplifiers next month. We simply don't have enough room this month to cover that well and provide more pressing information to you too. I have another guest writer this month, one too good to pass up.

Mithat Konar, my young multi-talented engineer and graphic artist friend who helped us make the Super Pas Three and Four better recently graduated from the University of Minnesota with an Electrical Engineering degree. Somebody out there must really need a super able and adaptable engineer. Call us quick at 612-890-3517 if you have an engineering position available worthy of his impressive capabilities. You won't find anyone better or with more varied talents.

Among Mithat's talents is loudspeaker design (and the ability to communicate). The following two articles are written by Mithat telling you most everything you need to know about one of his new projects, an actually good magnetically shielded loudspeaker system.

### Does The World Really Need Another Speaker?

©1993 Mithat F. Konar

For the past several years, I have been designing and building loudspeaker systems for people who haven't been able to find what they want from large, commercial manufacturers. These have all been one-off designs for custom applications; once a system has been designed and built and the client satisfied, the plans and project are put away, never to be seen again.

Well, not too long ago I had a client approach me asking for a cheap, accurate speaker that he could integrate into his video and computer systems. Doing anything with speakers cheaply, especially on a one-off basis, is a great challenge. Not being the type of person to back away from a good challenge, I took on the job. About a week after the client received his speakers, he called me to tell me how positively thrilled he was with them and that he was

considering replacing the mucho-expensive speakers in his main system with the ones I delivered. That was good news.

Shortly thereafter, I got a call from a friend of my client. This friend, a musician and amateur recordist, had heard the speakers I had designed and wanted a pair for himself. After I delivered his pair, he was even more appreciative than the first client.

"Gee," I thought, "maybe I have something here that a lot of people want."

About the same time, I was beginning to consider trying to reach a larger audience with my designs. While it certainly has been gratifying making several people very happy, I was beginning to think that it would be a whole bunch more gratifying to make a whole lot of people just as happy. And a lot easier, too. Putting two and two together, I thought this little speaker might be the ticket.

So I called Frank to try to get some idea of how large a demand for my little system there might be. After hearing and being sufficiently impressed with the system, he suggested we put a little blurb into *Audio Basics* to find out. And this is that blurb. The idea behind this is that if there is enough interest, I will do a small production run and make the system available to Frank's customers. And, I hope, make them happy.

#### What the system is

The system under question, which I have dubbed "The Little One", is an inexpensive, 15" x 8" x 10" two-way loudspeaker system (about the size of the B&W DM600) that has a negligible stray magnetic field (i.e. it is "shielded"). The fact that it has a negligible stray field means that it can be used in video and computer systems. Unlike many inexpensive "shielded" systems however, careful design has yielded a system that makes no sacrifice in sound quality. Rather than thinking of The Little One as a "shielded" system that sounds good, it would be best to think of it as a high fidelity loudspeaker that also has negligible stray fields -- at no extra cost. The targeted price is \$250.00 per pair plus shipping.

The Little One's low frequencies are handled by a special long excursion 5-1/4" driver with a

vented magnet structure and a polypropylene cone -- features of value typically found only on systems costing several times that of The Little One. The vented magnet structure allows the air normally trapped and grossly tormented between the dust cap and the pole piece to gracefully escape into the system enclosure. This makes for cleaner, more linear bass. The well-designed polypropylene cone results in smooth response through the midrange and beyond the crossover point. The woofer's rubber surround -- also a rarity at this price -- ensures that the sound of the system won't change over time as can happen when foam begins to rot or otherwise break-down.

High frequencies are handled by a 1/2", ferrofluid cooled dome tweeter which has useful response to beyond audibility. The crossover between woofer and tweeter has been carefully computer optimized to yield a special in-phase, symmetrical third-order response. Overall, this results in flat system response throughout the audio spectrum, and the minimum inter-driver phase difference reduces problems with off-axis colorations.

The cabinet is made from 3/4" material rather than the thinner 5/8" stock typically used for loudspeakers in this price range. The thicker material significantly reduces cabinet resonances and "boxiness." The cabinet comes wrapped in attractive Formica in a choice of oak, rosewood, black, gray, or white finishes. A removable grille is included.

So much for the features -- how does the system sound? Since Frank has heard the system, and since he is likely to be more objective than I, I will let him describe it.

*This is a surprisingly good little system, easily the best small "home made" speaker coming into our lab in recent memory and certainly the best small shielded system we have heard from any supplier. Actually "home made" is an unfair term to use with these speakers. The cabinets are just fine and the crossover engineering is impressive and original - there is nothing home made about these at all - small scale supplier would be a better term. It is fair to compare it with the B&W DM600 which is about the same size, is more expensive, and is not shielded. The Little*

*One is just as low coloration (no box sound at all), is perhaps even smoother and more extended - a fine bottom end for a small speaker, and it has no nasty rough edges. Its overall balance is a small bit on the dark side, but that is probably good as much video equipment is too bright and this will help tame things. It is certainly better overall than the B&W V201 (smoother) and is close to the DM610 in range. I don't really need a shielded speaker in my own audio video system but my last pair of the now discontinued black \$800/pair B&W CM-1s are in use there now - make me an offer. I certainly would not mind replacing them with The Little Ones. My first reservation is the efficiency of The Little Ones. With good electronics there will be no problems, but they may be pushing the envelope if used with the typical ornamental video - audio receiver (whose amplifier sections are essentially large scale IC chips - refugees from car radios). My only other reservation is that I am not so sure Mithat can build them with a retail price of \$250 a pair and make any money on them. Order lots of them and help him find out! FVA*

### Limitations

In nature, there is no free lunch (with the possible exception of transcendental experience). Concerning the two classic speaker loading methods, sealed and vented, there is a unique correspondence between the loading method, the given cabinet size, the system sensitivity, and the best attainable low-frequency extension. That means that if you want a certain low-frequency cutoff and a certain sensitivity, you must make your box larger than some minimum. Alternately, if you want a system with a certain size and with a certain sensitivity, you will only be able to achieve some minimum low-frequency cutoff. You can do a lot worse than that (and many do), but never any better. So, if you want deep bass in a small box, you must be prepared to accept fairly low sensitivity. There's no free lunch.

This, then, is the first limitation of The Little One. The Little One has a sensitivity about equal to that of the B&W CM1, i.e. 85dB at 2.83v at 1m. This compares to about 87dB for the B&W DM600 and 90dB for the B&W V201. Is this a major limitation? I have auditioned the

system extensively with a 20 Watt per channel solid-state amplifier, a Super Seventy tube amp, and an  $\Omega$ mega 150 power amp. Even with the 20 Watt solid-state amp, I didn't feel an aching for more power.

The second limitation is that the system impedance is nominally 4-Ohms. This presents a problem only if your amplifier is very, very crummy and can't drive itself out of a paper bag (in which case you're probably wasting your time even considering new speakers) or if you plan to connect more than one set of speakers at a time. The 4-Ohm impedance also means that you'll need to use 16 ga. or thicker speaker wire for runs greater than 10ft.

#### **How the system can be delivered**

Ideally, there will be enough interest in the system for it to make sense for me to do a small production run. However, if there isn't enough apparent interest to warrant a full run, it might be possible to make the system available as a kit (with or without cabinets) or as a set of plans with a list of component sources and directions.

If you've been looking for the type of system I've described above, please let Frank know. Also let him know which of the above options do or don't interest you. If there is enough positive interest, I will happily make a number of these systems available in the most practical form.

### **What Is A "Shielded" Speaker Anyway, And When Do I Need One?**

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Many readers of *Audio Basics* have no doubt noticed in other publications a near proliferation of so called "magnetically shielded" speaker systems. Not everyone, however, may know exactly what this "shielding" is and when it might be required. For those, I offer the following discussion.

Every magnet has a "field" around it -- a region of space where the magnet's influence is non-negligible. If you've ever seen the demonstration with a magnet under a piece of paper with iron filings on top of the paper, you have

observed the influence of the magnet's field on the filings. Almost all loudspeaker systems use magnets as a component in the systems that generate the forces that move the diaphragms that move the air, etc. Basically, when a magnetic field cuts across a speaker's voice coil that is carrying a current, a force is generated that forces the coil and anything attached to it to move either outward or inward, depending on the polarity of the magnet and the applied current.

With conventional loudspeaker magnet systems, the field is not limited only to the region immediately around the voice coil (which is the only place that the field is of any use); there exists a significant amount of "stray" field. And unfortunately, iron filings are not the only things that can be effected by a magnet's field, stray or otherwise. Electrons hurling through space, the kind you find inside your television or computer display tube, can be wildly affected by magnetic fields, as can the physical elements that store information on computer floppy discs and hard drives.

In the case of the television or computer display tube, the effect of an external magnetic field is to distort the displayed image. This effect can range from mild warping to total havoc depending on the intensity and location of the field and the design of the particular tube. In almost all cases, the magnetic fields surrounding a typical high fidelity speaker system are more than enough to distort images if the speakers are within a foot or so of the television. Luckily, the distortion is usually temporary. If you move the speakers away from the screen, the image will go back to normal in a matter of seconds or sometimes days if you've applied a particularly strong field. (However, DO NOT try this experiment at home unless you are willing to risk the consequences. There is a small chance you will permanently damage your picture tube.)

In the case of floppy disks and hard drives, the situation is somewhat worse. If you subject a floppy disk or hard drive to a strong enough magnetic field, for even a split second, the information on it will disappear. Forever. And the kinds of fields most speakers generate are enough to erase even the best of disks.

The recent crop of "shielded" speakers designed primarily to circumvent the first of these problems and manage to take care of the second in the process. The term "shielded" is actually something of a misnomer. A more correct term would be "negligible stray field" speaker, but most people, particularly on this side of the Atlantic, have an aversion to identifiers exceeding two words and to words exceeding two syllables. Such people would prefer to be inaccurate for the sake of linguistic convenience. A pity...

At any rate, as the term suggests, a "negligible stray field" speaker (a.k.a. "shielded" speaker) is a speaker that is designed to have a negligible stray field about it. This means that you can place it as close as you want to a television/computer screen or computer media without fear of distorting the image on the screen or destroying the data on the disks. In reality, it is impossible to remove all the stray field (hence the somewhat vague qualifier, "negligible"). This means that there is a practical limit to how close you can get to such a speaker, and some are better than others.

There are two popular methods currently used to reduce the stray magnetic fields around a speaker. The first involves placing a driver's magnet system in a magnetically conductive assembly that effectively limits the magnetic field to within the assembly. This type of structure can properly be referred to as a "shielded" structure. The second, and equally popular method uses an additional magnet on the back of the woofer or tweeter to bend the existing stray field back in on itself. This arrangement is sometimes called a "bucking magnet" configuration; it involves no shielding whatsoever. No matter the method, the effect, as far as our discussion here is concerned, is the same: a significant reduction in the intensity of a speaker's stray magnetic field.

#### **When are these systems useful?**

- If you would like to incorporate high quality audio into a video system and you want to place the speakers closer than a couple of feet to the screen, then you need a "negligible stray field" system.

- If you want to incorporate high quality audio into a computer system, or if you want to put high quality audio anywhere close to a computer, then you most emphatically need a "negligible stray field" system. Even if you locate the speakers well away from your computer, it will only be a matter of time before someone finds that floppy with your most highly prized data on it, and seeing a convenient place to put it, lands it right atop the speaker. At 3 a.m., after a long night of computing, that person may even be you.

Finally, you should note that there are some speaker technologies that do not use magnets and are thus without further modification free of stray magnetic fields. The most common of these technologies is the electrostatic loudspeaker. If a system is a full range electrostatic design -- like the QUAD ESL-63 -- it will be entirely free of stray magnetic fields. However, many electrostatic systems are actually hybrids using an electrostatic element for the mids and highs and a conventional dynamic speaker for the low frequencies. These are not free of magnetic fields unless the designer has taken steps to eliminate the stray field from the woofer's magnet -- as in the (stock) Acoustat Spectra 11. Full range ribbon systems, like those from Magnepan, should not be confused with full range electrostatic speakers. These ribbon systems use magnets -- though in a different configuration than the dynamic speaker -- and so possess a stray magnetic field.

### **New Lower Catalog Prices on Most AVA Products!**

We are pleased to announce *price reductions* on many Audio by Van Alstine new products and rebuilds. Your support this winter and spring has so improved our efficiency that we can now offer better than ever values for you. This is not another sale -- it is simply a significant reduction in many prices long term because our cost of production has decreased as volume has increased and we are sharing the savings with you. We also know that we are not going to have to build in much warranty or satisfaction guarantee cost into our new products -- they are not coming back for any reason!

Let's detail some of the savings.

The factory wired  $\Omega$ mega II preamp is reduced \$50 and the kit version is dropped. We could not economically write all of the different assembly instructions to make the kit builders happy with all of the great option possibilities in this chassis (there are so many possible combinations of functions that it is a lot easier to "just do it" than to tell you how). So we have priced the factory wired unit close to the old kit price and we will build it "your way." \$445 is a great price for this natural, smooth, and dynamic full function preamp.

The prices are reduced on all  $\Omega$ mega II and Fet-Valve power amplifiers. The acquisition of the first major resupply of all the metal parts is complete. It was nearly painless (as compared to the original design and procurement process) and all the tooling and setup costs are paid for now. We have passed the savings on to you. You will save at least \$100 per model, and significantly more on the Fet-Valve models. The Fet-Valve amplifiers in our new chassis have proven to be much more desirable to build and are exhibiting the same rock solid field durability and satisfaction in the field as the  $\Omega$ mega II amplifiers. So now the best hybrids there are cost a lot less.

Because good new Philips and Magnavox CD players are getting hard to find, we are extending the availability of our  $\Omega$ mega II and Fet-Valve CD circuits to select models of these you may already own at advantageous prices. Call us first to ensure that your CD player is suitable. Note that a new transport may be required at \$100 to \$150 extra cost.

Yes - there is a new FM/AM tuner coming we believe. It is based upon a new Philips FT920 and the results look very promising and the price will be very reasonable. When it is perfected you will be the first to know.

We hope you saw the review of our Hughes AK-100 rebuild in *The Perfect Vision*. They don't get more positive than that. We are getting good enough with this complex process to offer the rebuild for units you already own (it is nasty removing all those 14-pin ICs).

We have made the factory rebuild of the original Dyna Pas a little sweeter by throwing in a new signal tube set (four 12AX7A tubes) at no extra cost. We got tired of looking at your stray tube assortment. When it goes out of here it is going to sound its best. We reduced the price on the  $\Omega$ mega II buffers installed too.

We have jack sets (better than ever) available for the Super 70i again and good select power tubes too. Because so many 70s we see here for rebuild are so tired we changed our factory rebuild process to include "the works." That makes our life easier - we don't have to worry about salvaging hardly anything and it has allowed us to offer a better price for the whole package.

We have lowered the price of the  $\Omega$ mega II rebuilds for most Dyna and Hafler models. We are getting good at this and there simply are no field failures to account for. The rugged and smooth  $\Delta$ elta circuits are priced lower too - to allow better equipment and value for the entry level buyer.

The  $\Omega$ mega II circuits in the Dyna St-120 chassis is discontinued - the cost to re-order that special one-off use power transformer is not economical. Instead, simply consider buying a complete new  $\Omega$ mega II 200. Its price is barely more than the old rebuild and you get much better value.

Remember, ask us about very special prices when we can combine our electronics (two or more pieces) with appropriate B&W loudspeakers and give you a package deal. The extra value will please you.

Finally note that some retrofit and upgrade prices are lowered too. If you have an original  $\Omega$ mega preamp or amplifier, we urge you to consider the upgrade to  $\Omega$ mega II. The enhanced performance pleases everybody. See the recent review in *The Sensible Sound*. We have reprints available.

We have published our shipping rate chart so that you will know how much to allow for postage. We included our brokerage service policy again for our newer readers. It has proven great value for all of us.

## USED EQUIPMENT

**Omega II 500 Power Amplifier** (300 watts per channel and in nearly new condition with an AVA one year parts and labor warranty). This is our best current solid state circuit set in an excellent late model black Hafler 500 chassis complete with rack mount faceplate and grab handles. It is very high power, very high current (12 paralleled big die mosfets), quiet, and great sounding. It came in trade because although the fan is quiet, the owner wanted an absolutely silent amplifier and went for our Omega II 440hc instead. If you need super high power and super musicality too, there is no better choice. \$1095 + \$25 shipping in the continental USA.

**Transcendence Two Pat-5 Preamp** (AVA silver faceplate and AVA nickel jack set). This preamp is in immaculate condition both physically and electronically. It was built new by us and given superior care. It is musical and functional with switchable tone controls, switchable EPL loop, dual tape monitors, and speaker switching and headphone jack functions. It is \$295 with a six months parts and labor warranty, \$10 shipping in the continental USA.

**We have two (and only two) brand new unassembled Dyna St-150 chassis left.** We can build one with brand new Omega II 200 circuits and a slightly marred new black AVA faceplate at \$595 complete, or we can build either with our newest Delta 200 circuits (great sound, quiet, durable, and better than anything else you will find out there at under \$1000) and good used Dyna faceplates at \$395 complete. They will make nearly 100 watts per channel with a shielded toroid power transformer and all new AVA insides. Shipping is \$15 in the continental. Act now, these are the last of a classic series. Both carry our two year new parts and labor warranty.

**Omega II 150 Power Amplifier** in a good Dyna St-120 chassis. This was a very clean Omega 150 traded in on a Omega II 400. We upgraded the circuits to Omega II to give it

brand new performance (75 watts per channel, dead quiet, unbelievably smooth, transparent, and high definition) and a one year parts and labor warranty. The price is \$495 + \$15 USA shipping. We cannot economically build any more of these (the cost of the necessary power transformer to fit this unique chassis has gone way up) so this is your last chance at this great high performance package.

**Hughes AK-500 Retriever** This is a brand new stock budget version of the Hughes surround sound processor. We acquired it to determine if our circuit upgrades as so successfully done to the AK-100 (see our review in the Spring, 1993 issue of *The Perfect Vision*) could be done here too. Unfortunately, because this is essentially a one large scale integrated circuit unit our circuit upgrades cannot be done. So this stock unit is yours for our dealer cost, just \$99 plus \$5 shipping in the continental USA with a new Hughes warranty. Note that while the sonic effects will be appreciated with your video system or with most any Japanese receiver based audio system, the musical quality is not up to the standards of our audio electronics.

**Philips CD950 Dual Conversion Bitstream CD Player with Omega II output circuits** Brand new. Hope springs eternal and when Philips issued an enhanced version of their one-bit CD player (it should provide 6 dB better definition) we took a hard look at it. It has everything (great display, great transport, digital out, fiber optic out) and it does perform much better than the normal one-bit players. However, even with Omega II 300v/ $\mu$ S slew rate output circuits, it still is not quite as transparent or sweet as our 16-bit times four oversampling machines. So this one is yours new for our dealer cost, \$345 (list price is \$595 stock) and a standard Philips warranty. If you need more features and functions in a premium CD chassis you likely will not be able to do better. \$10 shipping in the continental USA.

*Frank and Darlene Van Alstine*

**AVA Revised Catalog Prices June 1, 1993**

**AVA PREAMPLIFIERS (factory wired and kit)**

Ωmega II 300V/μS Solid State Preamp - wired	445.00
The Ωmega II is available with your choice of phono, phase inverter (balanced line out), or buffered tape out circuits at no extra charge, more than one option is \$75.00 each additional.	
Super Pas 3i Tube Preamp - kit	495.00
Super Pas 3i Tube Preamp - wired	695.00
Super Pas 4i Hybrid Preamp - kit	595.00
Super Pas 4i Hybrid Preamp - wired	795.00
Fet-Valve Hybrid Preamp - wired	995.00
Fet-Valve Hybrid Preamp - less phono circuits	845.00

**AVA POWER AMPLIFIERS (factory wired)**

Ωmega II 200 Amplifier	695.00
Ωmega II 260 Amplifier	895.00
Ωmega II 260hc Amplifier	995.00
Ωmega II 440 Amplifier	1195.00
Ωmega II 440hc Amplifier	1295.00
Fet-Valve 300hc Hybrid Amplifier	1395.00
Fet-Valve 500hc Hybrid Amplifier	1695.00

**AVA FET-VALVE BRIDGE (factory wired)**

Fet-Valve Hybrid Phase Inverter Bridge	395.00
(If purchased with an AVA amp or preamp)	295.00

**AVA VERSA-KIT (multi-purpose line preamp)**

Ωmega II Headphone Amplifier, Phase Inverter, or two input Line Only Preamp (specify which configuration you want when ordering)	
Unassembled Kit	195.00
Factory Wired	275.00
Bare PC card and plans	25.00

**AVA COMPACT DISC PLAYERS**

Ωmega II CD Player	395.00
Fet-Valve CD Player	1195.00
Install Ωmega II circuits in your Philips or Magnavox CD Player (call for details)	245.00
Install Fet-Valve Circuits in your Philips/Magnavox	995.00

**AVA PHONO CARTRIDGE**

Longhorn Grado Z Phono Cartridge	95.00
Replacement Stylus for Longhorn Grado	45.00

**AVA FM/AM TUNER**

*Watch this space - a new tuner is coming soon!*

**GRADO HEADPHONES**

Grado SR-200 state of the art Headphones	165.00
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**HUGHES SURROUND SOUND PROCESSOR**

Hughes AK-100 Processor w/AVA Upgrades	495.00
Upgrade your Hughes AK-100	295.00

**AUDIO BASICS MONTHLY NEWSLETTER**

Audio Basics to addresses in USA	16.00 per year
Audio Basics Back Issues (82 thru 92)	15.00 per year
Audio Basics to Canada	20.00 per year
Audio Basics elsewhere via air mail	24.00 per year
Audio Basics Index Disk (Hypercard 2.0/Mac)	10.00 3.5" disk

**AVA PREAMPS FOR YOUR DYNA CHASSIS**

**Dyna Pat-5 & Pat-4 Chassis**

Ωmega II Factory Rebuild	345.00
Ωmega II Rebuild Kit	195.00
Ωmega II Plans and 3 Bare PC Card Set	75.00
Fet-Valve Factory Rebuild - Pat-5 only	945.00
Fet-Valve Factory Rebuild - less phono circuits	795.00

**Dyna Pas-2, 3, & 3X Chassis**

Super Pas Three Factory Rebuild (includes 4 tubes)	395.00
Super Pas Three Rebuild Kit (tubes extra)	245.00
Ωmega II line and phono buffers installed	195.00
Super Pas Three Plans and 3 Bare PC Card Set	75.00

**Preamplifier Rebuild Options**

Phase Inverter Circuits Installed in Ωmega II	75.00
Gold Plated Jack Set Installed (NA Pat-4)	90.00
Gold Plated Jack Set Kit (NA Pat-4)	60.00
Black AVA Faceplate Installed (NA Pat-4)	75.00
Ceramic Selector Switch Installed	75.00
Ceramic Selector Switch Kit (specify chassis)	45.00

**AVA AMPS FOR YOUR DYNA/HAFLETER CHASSIS**

**Dyna St-70 Vacuum Tube Amplifier Chassis**

Super 70i Circuits factory installed	595.00
(includes circuits, power transformer, jacks, & all new tubes)	
Super 70i Rebuild Kit (includes 6GH8A tubes)	195.00
AVA Power Transformer & Diode Bridge Kit	100.00
AVA Input - Output Jack Set kit for St-70	40.00
Super 70i Rebuild Plans and Bare PC Card Only	50.00

**Dyna ST-120 & ST-80 Chassis**

Δelta 120 Circuits or Δelta 80 circuits	295.00
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**Dyna ST-150 Chassis**

Ωmega II 200 Circuits	495.00
Δelta 200 Circuits	295.00

**Dyna St-410, St-400, & St-416 Chassis**

Ωmega II 400 Circuits	895.00
Δelta 400 Circuits	495.00

**Hafleter XL-280, DH-220, & DH-200 Chassis**

Ωmega II 250 Circuits	695.00
Δelta 250 Circuits	395.00

**Hafleter XL-600 & DH-500 Chassis**

Ωmega II 600/500 Circuits	895.00
Δelta 600/500 Circuits	495.00

**REPLACEMENT VACUUM TUBES**

Set of four select high gain 12AX7A tubes	40.00
Set of two select high gain 12AX7A tubes	25.00
12X4 Rectifier Tube for Dyna Pas	10.00
Set of two select 6GH8A tube for Super 70i	20.00
Set of four select 6CA7 tubes for Super 70i	80.00

**Ask for our separate loudspeaker data sheets for details on B&W loudspeakers.**

**Check with us for special system prices when you order at least two pieces of electronics and loudspeakers at the same time.**

**All prices & specifications are subject to change without notice.**

**Call or write for availability & pricing on 240 volt equipment.**

**Add 6.5% sales tax for orders to be delivered in Minnesota.**

**All prices are plus shipping. Check the shipping rate chart.**

**AVA Component Retrofit and Upgrade Prices June 1, 1993**

<b>Chassis</b>	<b>From</b>	<b>To</b>	<b>Price</b>	<b>Notes</b>
AVA	Super Pas 4 (kit or wired)	Super Pas 4i	75.00	Major low cost upgrade!
Dyna Pat-4	Ωmega	Ωmega II	100.00	
Dyna Pat-4	Any other AVA Circuits	Ωmega II	195.00	
Dyna Pat-5	Ωmega	Ωmega II	100.00	
Dyna Pat-5	Any other AVA Circuits	Ωmega II	195.00	
Dyna Pat-5	Any AVA circuits	Fet-Valve	895.00	
Dyna Pas-5	Any AVA circuits	add black AVA faceplate	75.00	
Dyna Pas-5	Any AVA circuits	add AVA gold jack set	90.00	
Dyna Pat-5	Any AVA circuits	add ceramic selector switch	75.00	
Dyna Pas-3 cards	Super Pas, Super Pas Two	Super Pas Three	295.00	New supply, upgraded audio
Dyna Pas-3	Super Pas Three	add Ωmega II Buffers	195.00	output and phono
Dyna Pas-3	Super Pas Three	add Ωmega II Buffers	125.00	output only
Dyna Pas-3	Super Pas Three	add black AVA faceplate	75.00	
Dyna Pas-3	Super Pas Three	add Ceramic selector switch	75.00	
Dyna Pas-3	Super Pas Three	add AVA gold jack set	90.00	
Dyna Pas-3	Super Pas Three Ωmega	upgrade to Ωmega II buffers	75.00	(parts alone \$50.00 + \$ shipping)
Hafler (any amp chassis)	Ωmega	Ωmega II	200.00	
Hafler (any amp chassis)	Any AVA Mos-Fet Series	Ωmega II	595.00	
Dyna St-400, 410, 416	Ωmega	Ωmega II 400	200.00	
Dyna St-400, 410, 416	Any AVA Mos-Fet Series	Ωmega II 400	595.00	
Dyna St-150	Ωmega	Ωmega II 240	200.00	
Dyna St-150	Any AVA Mos-Fet Series	Ωmega II 200	395.00	new faceplate no longer available
Dyna St-120	Any AVA Mos-Fet Series	Δelta 120	195.00	with low noise regrounding
CD Players (Any AVA)	Fet 3, Δelta, Ωmega	Ωmega II	100.00	See Note Below
FM Tuners (130 or 330)	Fet 3, Δelta, Ωmega	Ωmega II	100.00	

**Notes:**

All prices are plus return shipping cost. Refer to shipping price chart for shipping prices.

Call us at **612 890-3517** to confirm the status and cost and packing instructions to upgrade your equipment before shipping to us.

Our prices assume that you are sending an AVA wired and working unit not subsequently modified by others.

If you do not see your old AVA equipment on this list, call us to find out if there is an upgrade available for it.

Upgrade prices assume **no complications**. If your unit needs additional work to complete the conversion (upgraded supply or controls for example) the price will be higher.

Upgrades are not available as user installed kits.

CD Players will likely require a new transport assembly if they are not packed perfectly for travel. The current cost of a replacement transport is \$150.00 installed. This is in addition to the upgrade cost. Call us before shipping to make sure your unit is worth upgrading and that you understand how to pack it complete with travel screws.

## Used AVA Component Brokerage Service

Factory tested and guaranteed used AVA components – a great opportunity for both seller and buyer.

Prospective buyers, this is your way of getting outstanding AVA audio components at a much lower price than new, with little risk because of our satisfaction guarantee, and with an AVA warranty.

Prospective sellers, if you need to sell used AVA equipment in order to buy new AVA equipment from us, we will sell the equipment for you, provide the prospective buyer a better warranty than you can, reach a market you cannot, and charge you just 10% for our service.

When you want to trade your old AVA electronics towards the purchase of new AVA electronics, the used AVA equipment must be sent to us for our inspection and evaluation. We will then suggest a fair used price for it (typically about 60% of new for newer equipment and 30% to 50% for older models, depending upon age and condition). If you agree with our suggested price we will list the equipment in *Audio Basics*. We will guarantee to prospective buyers that the description of the equipment is accurate, we will clean the controls and switches as possible to put the equipment in good working order, we will clean up faceplates and knobs as necessary and possible, we will even make minor necessary repairs at no labor cost to the seller (parts will be charged for as necessary).

When the equipment sells (the buyer pays us directly) we will pack and ship it to the buyer and offer the same 30 day satisfaction guarantee as with our new equipment (subject to the same 9% restocking charge). We will also provide a 90 day limited parts and labor warranty or transfer the balance of the original AVA warranty to the new owner, whichever is longer.

When the 30 day satisfaction return period has passed, we will credit the seller with 90% of the sale price toward the purchase of new AVA made equipment. No cash disbursements will be made other than as reimbursement against sales paid for in full in anticipation of our sale of the used equipment. We will charge 10% of the used equipment sale price as a reasonable fee to cover our overheads.

Obviously, you are not going to get your new equipment as fast as if you simply pay for it outright (we can't deliver until your old equipment is sold, paid for, and its 30 day satisfaction guarantee expires), but with a bit of patience, this service can be of real value to both buyers and sellers.

If the equipment does not sell within a reasonable time (perhaps 60 days) then the seller will have the option of either lowering the price or having it returned to him for only the return shipping costs. If we cannot sell the equipment at a fair price then we will not charge the owner for our listing, testing, and clean up service for that equipment.

You must call us first at 612 890-3517. We need to discuss the equipment with you, find out what you will be buying, suggest what the pricing should be, and make sure you have equipment suitable for our service. Send us your used equipment only after obtaining authorization from us.

Our brokerage service has helped many obtain better AVA equipment than they could otherwise afford. Subscribe to *Audio Basics* to get the monthly used equipment lists (or call us to find out what has just become available - bargains go very quickly). It can be an outstanding value for you.

### Shipping Price Chart

CATEGORY	U.S. UPS SURFACE	U.S. UPS 2-DAY AIR & CANADA SURFACE	FOREIGN AIR
Small Things (Rebuild Kits, Phono Cartridges, Tubes, Switches, Headphones, Small Parts Orders)	4.00	7.00	30.00
Preamps, Tuners, CD Players, Complete Preamp Kits	10.00	25.00	75.00
Power Amps <140 Watts/Ch	15.00	50.00	150.00
Power Amps ≥140 Watts/Ch	25.00	65.00	Call Us
B&W Loudspeakers	N/C	Call Us	Call Us