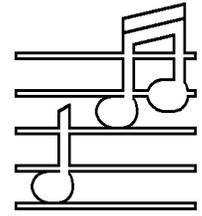


AUDIO BASICS



AMONTHLY NEWSLETTER OF AUDIO INFORMATION
VOLUME TWELVE NUMBER ELEVEN NOVEMBER, 1993

A New Project for You, and a New Catalog Too!

I had fun upgrading the graphics in this new catalog with a Nikon Coolscan slide scanner. It allowed me to scan slides or negatives at up to 2700 dpi, blow them way up in the computer for editing and retouching in Photoshop, and then to save the images in a PageMaker file. We printed to a high resolution Linotronic and used the 100 line screened output as the direct original for a high speed Xerox dry printing process. Other than the processing of the original rolls of film, no darkroom or ink printing process was required. The results were fast, economical, and allowed us to include many more and better photos for the money. Let me know what you think of the results.

We still can do gift certificates.

Time is short, but we can still have gift certificates for *Audio Basics* (or equipment) for you if you send us your order promptly. Darlene prepares individual gift cards and sends them on to the recipient at no extra charge. Simply send us your order for a gift subscription – or equipment too if you are really feeling generous – in the next week and we will get the card to them by Christmas and the equipment to them shortly thereafter.

The deadline for us to receive “got to have it for Christmas” equipment orders is December 8th, and that assumes a money order for payment and that you are paying for 2-day shipping of the equipment. Call us first at 612-890-3517 to make sure we can still do it with the equipment you desire. Unfortunately, FM/AM Tuners are back ordered until late January as Philips managed to run themselves out of stock in the USA. They tell us more tuners will be available in January, but hold up on tuner orders until then and call us first regarding availability. Our CD Players are still available.

We got more good reviews.

Read the most current issue of *The Sensible Sound* (#49, Fall '93). They look closely at the Super Pas 4i and the Super Pas Three with favorable impressions.

We also were noticed in the new *Home Theater* magazine (November, 1993) in an article regarding mail order purchasing.

I received a bit of notoriety in one amateur rag too (actually somewhat of a character assassination).

The editor is still annoyed at me because I told him several years ago that I was underwhelmed by his methodology and technique of judging the quality of vacuum tubes “by ear.” (It is tantamount to running tire handling tests without a pressure gauge or wheel balancer.) He was messing around inside his buddy’s Fet-Valve 300 amplifier without any understanding that changing from a high gain tube to a low gain tube was simply liking the increased distortion, lowering the power, and messing up the DC balance point. I have answered his recent diatribe. If you would like a copy of my response – I doubt if it will be printed – let me know.

It’s time to Renew *Audio Basics* Again.

Look at the address label on your envelope. If the four digit number next to your name reads 9311, 9312, or 9401, then your subscription expires in November, December, or January. Please get that renewal in as soon as you can so we will have time to update the mailing list and enjoy Christmas too.

The post office has not raised our first class postage rates yet, so we can go another year at the same price as before – 12 monthly issues for \$16.00 in the continental USA. (It is \$20 per year to Canada, and \$24.00 per year via air mail elsewhere).

Note that we never sell our mailing list names or customer record information. It is our private data and it goes nowhere else.

Thanks for your comments and feedback, it is what keeps writing *Audio Basics* enjoyable instead of being just another task.

The Pat-5 Chassis Phono to Line Input Conversion Project

Many of our clients using Dyna Pat-5 based preamplifier chassis have asked us if it would be possible to convert one of the two pair of RIAA phono inputs in this chassis to line level inputs to make their preamplifier more usable with modern sources. It has been possible to do this if our new selector switch is installed, but this is a more expensive and complex proposition than some desire.

So we researched this a bit further and here are the do-it-yourself instructions to convert the Phono 2 inputs on a Pat-5 based preamp to line level use (for CD, Tuner, TV, etc.) while *retaining the original Dyna selector switch*. Assuming you stay with the jacks now in your preamp, there is nothing more you will need except some solder and a few feet of two different colors of 20 or 22 gauge insulated hookup wire.

The instructions refer first to units with the new AVA ground plane jack set installed *because the project is much easier with the AVA jacks*.

We show you how to do it with the original Dyna jack strips too, but it is more tedious because two sets of the phono input jack strips must be removed and modified to allow the conversion. It is simpler to just order our new gold plated jack set (\$60 plus \$4 shipping) which provides 24 new jacks spaced so that modern cables fit and install it at the same time as making the conversion. Make sure you inform us as to whether you want one or two sets of RIAA phono inputs if you order the new jack set. We prepare them slightly differently depending upon intended use.

The project is valid with any AVA circuit set in a Pat-5 chassis (assuming that the AVA ceramic switch has not already been installed - in which case this project is redundant). The drawings show the most current Ω mega II circuit cards installed, but the concepts are the same with any circuits.

The conversion will work with the original Dyna circuits too although specific instructions are not provided for that iteration. You need only note that the original circuits use separate phono boards and you will need to keep track of their input and output eyelets (PC-33 eyelet 2 is phono in, eyelet 3 is ground, and eyelet 7 is phono output) to make the revised connections to the switch and jacks. With a Pat-5 Bi-Fet model, it will be necessary to first strip out the high gain - low gain switch wiring on the back panel. This project does not accommodate that function as it changed the gain on the phono section by changing feedback parts on the fly. If that back panel toggle switch is used while the system is on then a speaker and/or amplifier damaging pulse could be generated - a bad thing!

The way the preamplifier is originally wired, the phono inputs first feed into the phono wafers of the switch (CF/CR and DF/CR) and then on to the RIAA phono section where the phono signal is equalized and amplified. The output of

the RIAA phono circuits is then fed back to the switch again (at line level wafers AF lug 6 and BF lug 6) where it can be selected as can any other line level source. Since both Phono 1 and Phono 2 inputs first feed into the RIAA phono section via the switch, they cannot be used for a line level source without changing the wiring.

We make the necessary changes, effectively moving the phono wafers of the selector switch to after the RIAA phono section, instead of ahead of it so that its function can be used to switch in one phono plus another line level source instead of two phono sources.

When we are finished, the Phono 1 wiring will go directly to the RIAA phono circuits first, bypassing the switch. We will take the output of the phono section back to the Phono 1 inputs on the switch. We will connect the Phono 2 jacks directly to the Phono 2 inputs on the switch, bypassing the RIAA phono section with them. This converts Phono 2 into an additional line level pair. The outputs of the phono sections of the switch are then fed on to the inputs of the line sections of the switch, completing the circuit. We will also re-wire the switch contacts for paralleled operation, improving the reliability. The finished project will still have normal Phono operation on the Phono 1 inputs, but Phono 2 will be an additional line level input pair for your TV, CD, Tuner or VCR.

This project assumes that you are starting with a properly wired and working preamplifier and that you already know how to make good solder connections. It will provide you with a more functional preamplifier at basically no cost except an evening's time. Unplug your preamp from AC and from the system, remove the cover (5 screws) and let's operate.

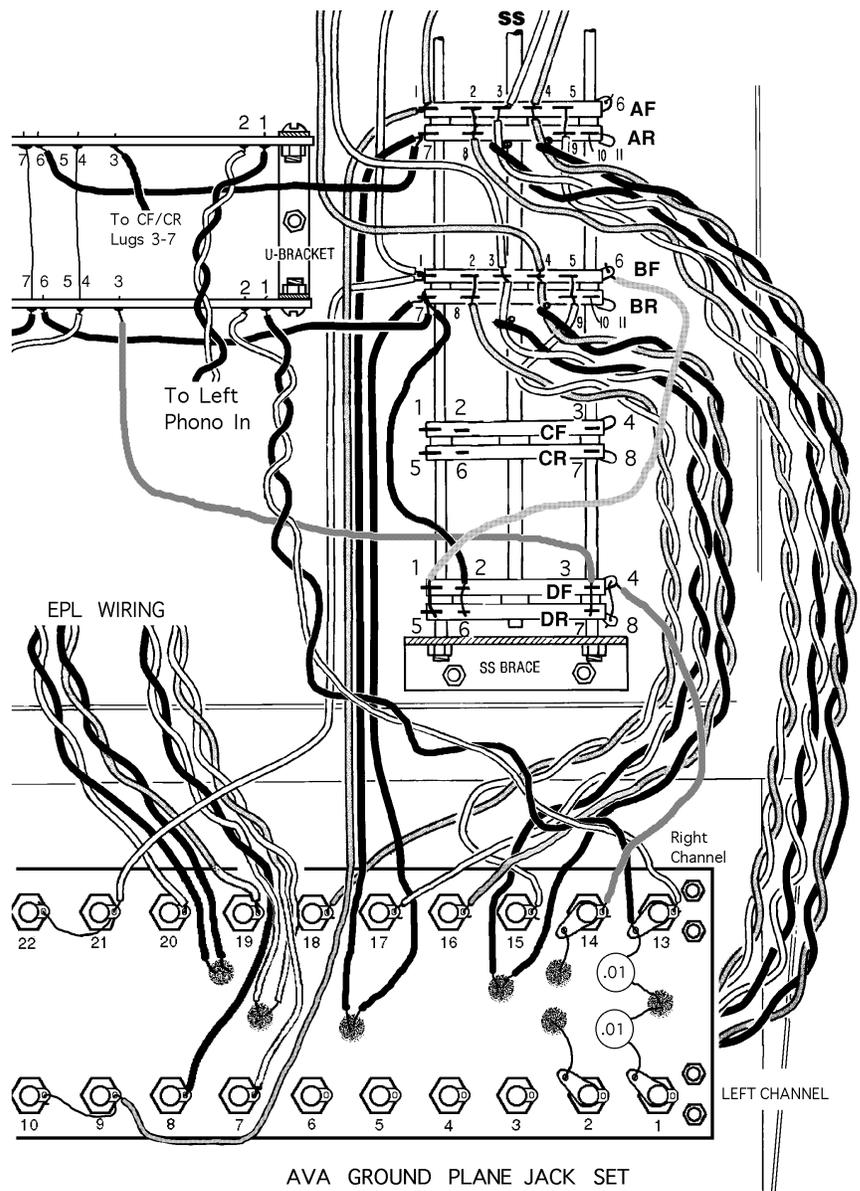
1. If your preamplifier has the AVA ground plane jack set already installed, refer to the drawing of the switch wiring showing the AVA GROUND PLANE JACK SET.
2. *If your preamplifier has the original Dyna jack strips, skip ahead to Instruction #20 now.*
3. Note that for clarity, only the right channel wiring (using switch wafers BF/BR and DF/DR, and using the bottom row of jacks) is shown. The left channel wiring is identical and must be revised too.
4. Locate selector switch wafer pairs CF/CR and DF/DR (the switch wafers now used by the phono sections of your preamp). On each wafer pair Lugs 1/5 are outputs, Lugs 2/6 are ground, Lugs 3/7 are Phono 1 inputs, and Lugs 4/8 are Phono 2 inputs.
5. The twisted pair of wires from Lugs 1/5 and Lugs 2/6 of each wafer now connect to the phono input eyelets at the RIAA Phono sections of the PC cards (Lug 1/5 to the signal input eyelets, Lug 2/6 to the ground eyelets). Disconnect these wires at the circuit boards keeping track of which eyelet is signal and which is ground (with

our current circuits eyelet 1 on each board is ground, eyelet 2 is signal in). If there is a resistor in series with the wire at the phono input eyelets, keep it in place for later re-use.

6. At the back panel jacks, disconnect the twisted pair at Jack 1 hot and ground, and at Jack 13 hot and ground. Keep the .01 μ F/100V ceramic disc capacitors at the ground lugs in place as is.
7. At the back panel jacks, disconnect the jumper wire connecting the ground lug of Jack 2 to the ground lug of Jack 1. Also disconnect the jumper wire connecting the ground lug of Jack 14 to the ground lug of Jack 13.
8. With two short jumper wires, solder the ground lugs of Jacks 2 and 14 to the ground plane foil as shown in the drawing. This converts Jacks 2 and 14 (Phono 2 inputs) to line level inputs. The ground lugs of Jacks 1 and 13 remain DC isolated from chassis ground for phono use.
9. Carefully disconnect all of the wiring at selector switch wafers CF/CR and DF/DR (the rear two sets of wafer pairs) cleaning the holes in the lugs out with a wood toothpick to allow for the installation of new wires later. Remove any load resistors or capacitors that are connected to these switch lugs too.
10. Unwind the wires connected to Jacks 2 and 14 from the now otherwise disconnected wiring. Shorten these wires as appropriate and reconnect the free ends of the switch wafers. The wire from Jack 14 connects to DF/DR Lugs 4/8 (solder to both lugs). The wire from Jack 2 connects to CF/CR Lugs 4/8 (solder to both lugs).
11. Locate the wires from switch wafer AF Lug 6 to the left channel RIAA phono section output eyelet on the PC card, and the wire from switch wafer BF Lug 6 to the right channel RIAA phono section output eyelet. These are the third set of eyelets with newer AVA cards. Disconnect these wires at the circuit board ends only.
12. Connect the free end of the wire from AF Lug 6 to CF/CR Lugs 1/5 and solder both connections. Connect the free end of the wire

from BF Lug 6 to DF/DR Lugs 1/5 and solder both connections. Make sure no bare wires can touch the SS Brace near DF/DR. Make sure the wiring at AF Lug 6 and BF Lug 6 does not touch any other lugs (AR 10 and 11 and BR 10 and 11 are not used).

13. Connect a wire from AR Lug 7 to CF/CR Lugs 2/6 and solder all three connections. There are two additional wires already connected at AR Lug 7.
14. Connect a wire from BR Lug 7 to DF/DR Lugs 2/6 and solder all three connections. There are two additional wires already connected at BR Lug 7.
15. Connect a wire from the RIAA Phono output eyelet on the left channel PC card (normally eyelet 3) to CF/CR Lugs 3/7 and solder all three connections.



16. Connect a wire from the RIAA Phono output eyelet on the right channel PC card (normally eyelet 3) to DF/DR Lugs 3/7 and solder all three connections.
17. Prepare a light and dark colored tightly twisted pair of wires about 16" long. Connect the dark colored wire to the ground lug at phono input jack #13 and solder (a .01 μ F capacitor lead is already connected here). Connect the light colored lead to the signal terminal at the end of the jack and solder.

Route the twisted pair along the bottom of the chassis and up to the right channel RIAA phono circuit section of the pc card. Trim the length to fit and connect the dark colored lead to eyelet 1 (ground) and the light colored lead to eyelet 2 (signal in) and solder. [On some older AVA cards, there may be a 1000 ohm resistor connected at the signal in eyelet (eyelet 2). If so connect the free end of the light colored wire to the free end of the 1000 ohm resistor to put the resistor in series with the signal connection.]

18. Prepare another light and dark colored tightly twisted pair of wires about 16" long. Connect the dark colored wire to the ground lug at phono input jack #1 and solder (a .01 μ F capacitor lead is already connected here). Connect the light colored lead to the signal terminal at the end of the jack and solder.

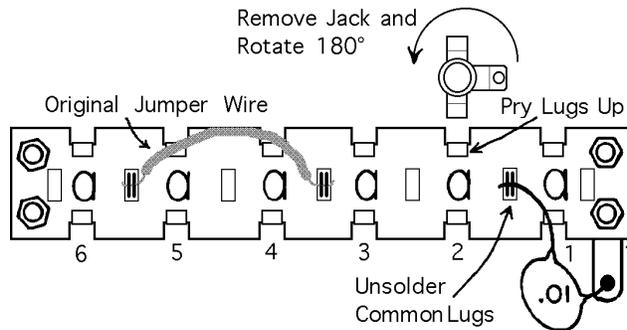
Route the twisted pair along the bottom of the chassis and up to the left channel RIAA phono circuit section of the pc card. Trim the length to fit and connect the dark colored lead to eyelet 1 (ground) and the light colored lead to eyelet 2 (signal in) and solder. [On some older AVA cards, there may be a 1000 ohm resistor connected at the signal in eyelet (eyelet 2). If so connect the free end of the light colored wire to the free end of the 1000 ohm resistor to put the resistor in series with the signal connection.]

19. This completes the wiring work for units with the AVA ground plane jack set. Note that the wiring to jacks 3 – 6 remains connected. They are not shown on the drawing to allow clearer viewing of the change at jacks 1, 2, 13, and 14. The project is now completed, reinstall the cover. Now Phono 2 inputs will accommodate any line level source to make your preamp more useful than ever.

20. The following instructions apply only if your preamplifier has the original Dyna jack strips, which first must be modified to accommodate the switch rewiring.

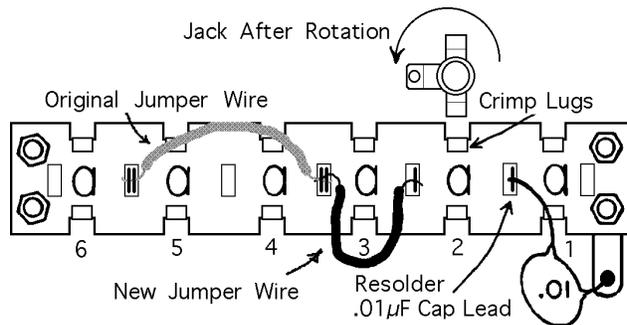
For correct grounding and lowest noise operation, it is necessary to provide a solid chassis ground for all line level inputs at the back panel. However, phono inputs must not be grounded at the back panel. An AC ground is provided through the .01 μ F disc capacitors, but DC ground is at the phono board.

The original Pat-5 assumed phono only use for the first two sets of input jacks. They are fastened to the jack strips with their ground lugs tied together (see drawing of Original Pat-5 Jacks Before Modification).



ORIGINAL PAT-5 JACKS BEFORE MODIFICATION

We must undo this mechanical connection to allow a solid chassis ground to the former Phono 2 jacks and still isolate the Phono 1 jacks from chassis ground (see drawing of Original Pat-5 Jacks After Modification).



ORIGINAL PAT-5 JACKS AFTER MODIFICATION

To accomplish this it is necessary to remove the two jack strips containing the phono inputs, de-solder the connections at the common ground lug between the Phono 1 and Phono 2 inputs, pry up the crimped over ground lugs on the inside of the phono 2 jack strips, lift the outer (ground) part of the jacks free of the board, rotate the ground sections of the phono 2 jacks 180° and reinstall them with the ground lugs isolated in the previously vacant hole in the strip between jacks 2 and 3 (14 and 15).

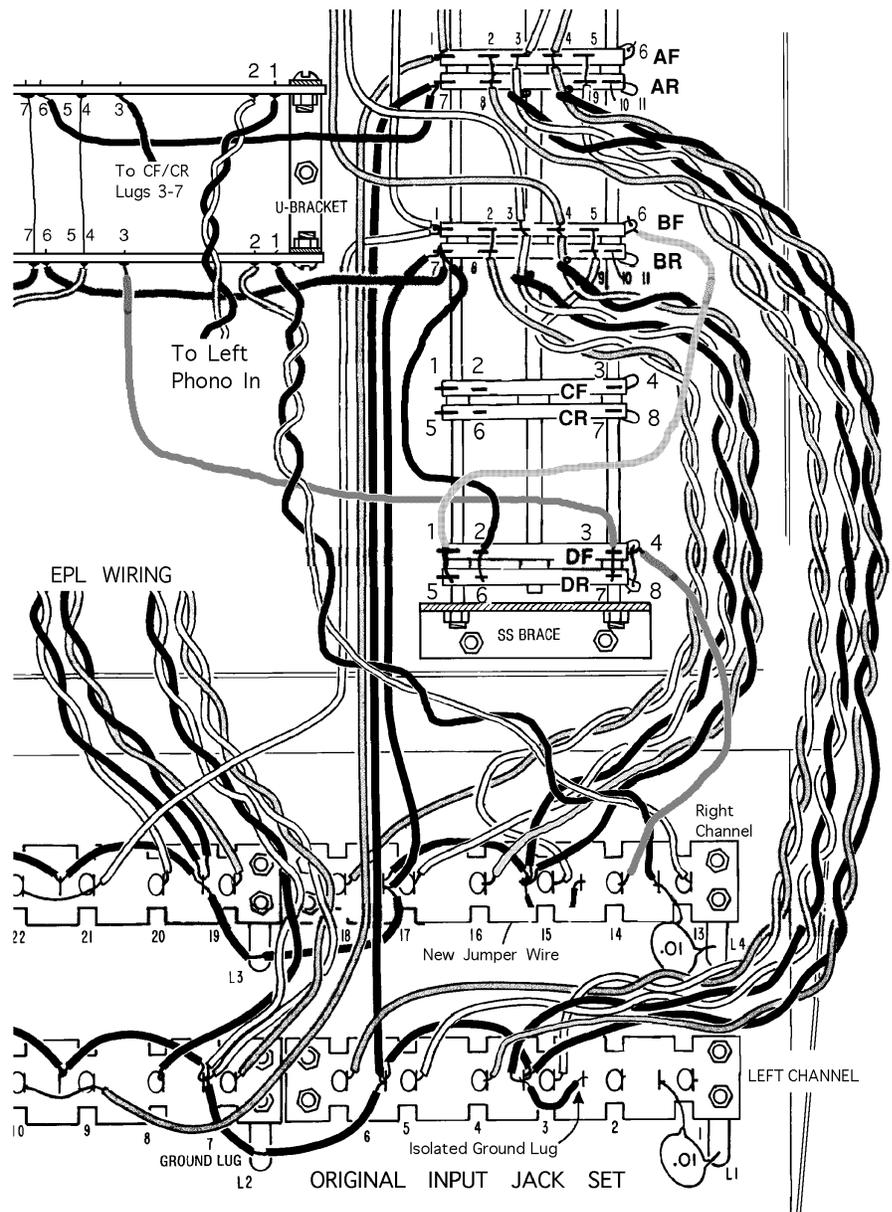
The following instructions tell you how to do this. Refer to the full page drawing labeled Original Input Jack Set.

21. Making sure you identify the wiring so you can put it back into the same locations later, carefully unsolder the wires to back panel jacks #1, 2, 3, 4, 5, and 6. Also unsolder and disconnect the ground wire at the short ground lug between jacks 1 and 2 and the ground wires at the short ground lug between jacks 5 and 6.

22. Now remove the four screws and nuts fastening the strip to the chassis (noting the extra lockwashers inside the chassis between the strip and the metal) and remove the jack strip.
23. Making sure you identify the wiring so you can put it back into the same locations later, carefully unsolder the wires to back panel jacks #13, 14, 15, 16, 17, and 18. Also unsolder and disconnect the ground wire at the short ground lug between jacks 13 and 14 and the ground wires at the short ground lug between jacks 17 and 18.
24. Now remove the four screws and nuts fastening the strip to the chassis (noting the extra lockwashers inside the chassis between the strip and the metal) and remove the jack strip.
25. Refer to the drawing of the Original Pat-5 Jack Before Modification. Unsolder and remove the .01μF disc capacitor connected at the ground lugs between jacks 1 and 2 (and 13 and 14 on the other strip - both strips are identical and the modification instructions are to be repeated for both). Save the capacitor and the still attached solder lug at the other lead. It will be reinstalled in the same place later.
26. Heat and remove all of the solder connecting the two short ground lugs between jacks 1 and 2. Heating the connection with a solder iron and then sharply rapping the strip edgewise against a solid surface can "snap" much of the solder off. The object is to free up the ground lug for Jack 2 so it can be removed.
27. When the ground lugs are unsoldered, pry up the two lugs fastening the Phono 2 ground part of the jack to the strip so the jack can be removed.
28. Pull the ground (outside) portion of the jack free of the strip and rotate it 180°. The signal portion with its inside ceramic insulation stays in place.
29. Reinstall the Phono 2 jack so that the solder lug portion now is located into the previously vacant hole between jacks 2 and 3 as per the drawing Original Pat-5 Jacks After Modification. Crimp the side

lugs down to re-fasten the jack to the strip. Make sure that the remaining single lug for the Phono 1 jack cannot make contact with the Phono 2 jack – these two must be isolated.

29. Reinstall the .01μF capacitor lead to the Phono 1 jack ground lug (another lead will be connected here later).
30. Install a new jumper wire from the now isolated Phono 2 jack ground lug to the ground lugs between Jacks 3 and 4 as shown in the drawing. The original jumper wire stays in place too. Now the Phono 2 jacks are tied to chassis ground instead of to phono ground while the Phono 1 jacks are isolated from chassis ground (except through the .01μF capacitor) and will connect to ground only at the phono circuit boards.
31. Reinstall one of the modified jack strips in the lower (right channel) location.



32. Prepare a light and dark colored tightly twisted pair of wires about 16" long. Connect the dark colored wire to the ground lug at phono input jack #13 and solder (a .01 μ F capacitor lead is already connected here). Connect the light colored lead to the signal terminal at the end of the jack and solder.

Route the twisted pair along the bottom of the chassis and up to the right channel RIAA phono circuit section of the pc card. Trim the length to fit and connect the dark colored lead to eyelet 1 (ground) and the light colored lead to eyelet 2 (signal in) and solder. [On some older AVA cards, there may be a 1000 ohm resistor connected at the signal in eyelet (eyelet 2). If so connect the free end of the light colored wire to the free end of the 1000 ohm resistor to put the resistor in series with the signal connection.]

33. Reinstall the previously disconnected wiring to jacks 15, 16, 17, 18, and to the ground lugs between jacks 17 and 18. The original wiring to jacks 13 and 14 and the ground wire to the lug between these jacks is not re-used.
34. Re-install the remaining modified jack strip in the top (left channel) location.
35. Prepare another light and dark colored tightly twisted pair of wires about 16" long. Connect the dark colored wire to the ground lug at phono input jack #1 and solder (a .01 μ F capacitor lead is already connected here). Connect the light colored lead to the signal terminal at the end of the jack and solder.

Route the twisted pair along the bottom of the chassis and up to the left channel RIAA phono circuit section of the pc card. Trim the length to fit and connect the dark colored lead to eyelet 1 (ground) and the light colored lead to eyelet 2 (signal in) and solder. [On some older AVA cards, there may be a 1000 ohm resistor connected at the signal in eyelet (eyelet 2). If so connect the free end of the light colored wire to the free end of the 1000 ohm resistor to put the resistor in series with the signal connection.]

36. Reinstall the previously disconnected wiring to jacks 3, 4, 5, 6, and to the ground lugs between jacks 5 and 6. The original wiring to jacks 1 and 2 and the ground wire to the lug between these jacks is not re-used.
37. Locate selector switch wafer pairs CF/CR and DF/DR (the switch wafers now used by the phono sections of your preamp). On each wafer pair Lugs 1/5 are outputs, Lugs 2/6 are ground, Lugs 3/7 are Phono 1 inputs, and Lugs 4/8 are Phono 2 inputs.
38. The twisted pair of wires from Lugs 1/5 and Lugs 2/6 of each wafer now connect to the phono input eyelets at the RIAA Phono sections of the PC cards (Lug 1/5 to the signal input eyelets, Lug 2/6 to the ground eyelets). Disconnect these wires at the circuit boards keeping

track of which eyelet is signal and which is ground (with our current circuits eyelet 1 on each board is ground, eyelet 2 is signal in). If there is a resistor in series with the wire at the phono input eyelets, keep it in place for later re-use.

39. Carefully disconnect all of the wiring at selector switch wafers CF/CR and DF/DR (the rear two sets of wafer pairs) cleaning the holes in the lugs out with a wood toothpick to allow for the installation of new wires later. Remove any load resistors or capacitors that are connected to these switch lugs too.
40. Connect a new wire from Jack 14 (old right channel Phono 2) to switch section DF/DR Lugs 4/8 (solder all three connections).
41. Connect a new wire from Jack 2 (old left channel Phono 2) to switch section CF/CR Lugs 4/8 (solder all three connections).
42. Go back in these instructions and now complete steps 11, 12, 13, 14, 15, and 16 to finish the switch rewiring.

This completes the project - enjoy the improvements. FVA

Used Equipment

Omega II Pat-5 Preamplifier with silver AVA faceplate in very nice condition. Our current 300V/ μ S solid state circuits with switchable tone controls, switchable EPL loop, RIAA phono circuits, precision volume and balance controls, and our six month parts and labor warranty. New performance for a budget price. \$345 plus \$10 shipping.

Transcendence II FM Tuner. Our clean and stable discrete solid state circuits in an excellent Hafler DH-330 tuner chassis. 5 pre-sets, pretty LED display, seek and search, switchable muting. 5 year old and working fine. \$245 plus \$10 shipping with a 90 day parts and labor warranty.

New Omega II 400 circuits in used Dyna 416 chassis, LED display, silver rack mount faceplate with grab handles, and quiet cooling fan. It is solid but scuffed up cosmetically so we will charge you only \$100 for the chassis plus \$895 for the new circuits installed. You get equal performance of a new Omega II 440 for \$300 less. Do you need extended 1 and 2 ohm load driving capability? We can build this amp with 16 big-die power mos-fets instead of 8 for \$250 extra - the ultimate Infinity and Apogee driver! New two year parts and labor warranty on our circuits, 90 days on the original hardware. \$25 shipping in the continental USA.

Two New Super 70i Power Amplifiers in average chrome and brown used Dyna St-70 chassis. These include our new circuit boards and input and output jacks factory installed and new signal tubes. They use the original Dyna transformers and tube rectifiers. The sound is beautiful, the cost is just \$625 each with a two year parts and labor warranty on our circuits, 90 days on the original Dyna parts and 30 days on tubes. \$25 each shipping.

Frank and Darlene Van Alstine