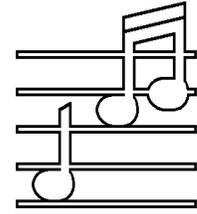


AUDIO BASICS



A MONTHLY NEWSLETTER OF AUDIO INFORMATION

VOLUME ELEVEN NUMBER EIGHT AUGUST, 1992

A New Multi-Use Line Preampifier Do-It-Yourself Project

For your edification and enjoyment, the following is the complete construction manual for our brand new low cost Ω mega II line preamp. Those of you with parts procurement skills need nothing else from us at all – you will get very good musical performance with any unity gain stable fet input 8-pin linear op-amp (MC34081 or TLO71 recommended). If you don't want to etch your own board, you can buy just the PC card from us for \$25 (including shipping in the USA) and have at it. The PFT chassis we specify is very nice, with a black front and charcoal trim as we use for the Fet-Valve inverter and CD circuit box. Obviously the preamp can go in any old box you have laying around too.

For those that want the complete kit from us, chassis and all *and with the musically superior special Ω mega II line ICs*, the price is \$225 (or \$295 for a complete ready to play wired unit) (plus \$10 shipping in the USA for either).

One other point of interest. While the following shows the line preamp version of this new Ω mega II unit there is more! *The unit can be built as a headphone amplifier or a phase inverter (bridge) at no extra cost.* The board (and the complete \$225 kit) supports your choice of circuit applications. There just was not room for everything in this issue of *Audio Basics*. Perhaps next month if there is enough demand.

The complete Ω mega II Line Preamp Kit Instructions

The Audio by Van Alstine Ω mega II Line preamp kit provides you with all of the parts and instructions necessary for you to assemble your very own complete new state of the art solid state line preamplifier.

Successful completion of this project will require your careful attention to following directions. **Our first direction is that you read through all of this manual before actually starting the work.** Learn about the entire scope of the project before digging into it.

Your new Ω mega II Line preamplifier will give you long term quiet, durable, and satisfyingly musical results if you take care to follow these directions with quality workmanship. Our circuit design has no turn on or turn off thumps and operates very conservatively for long service life and low heat. It is only up to you to accurately assemble the high quality components we have provided.

Tools.

You will need a low wattage solder pencil, a wire cutter, a wire stripper, a needle nose pliers, a large pliers, a 1/16" hex (Allen) wrench (for the knob), and flat blade and Phillips screwdrivers. You will need an electric drill with 5/32", 1/4", 3/8", 15/32", and 1/2" bits that will make round smooth holes in sheet metal. We have supplied very high quality solder that wets and flows easily and makes reliable and durable connections. Do not substitute solder. Some solder compounds may have too high a melting temperature or use a corrosive or inadequate flux, causing permanent and possibly non-repairable damage to connections and parts. Use only the solder we have supplied.

Factory Support and Free Bench Checkout.

You may return your completed Ω mega II Line preamp to us for a free bench checkout. We urge you to do this before you ever plug it in. Assuming your unit does not need repairs, the charge will be \$10 for return shipping via UPS surface in the continental USA.

If your unit does need repairs, you will be advised of the costs and options before we proceed. If the unit is being sent to us for a checkout from outside the continental USA, call us first to determine what payment to include for return shipping.

Factory advice regarding the rebuild process is available **if you call us at 612-890-3517** during normal central time zone business hours. The better you describe your problem, the more helpful we can be. Sorry, we simply do not have the time available to respond in writing to letters detailing kit building problems. You must call us for service support and for return authorization before shipping a unit here for our service and/or free checkout.

Limited Warranty.

Our limited warranty is 90 days (starting with the date we shipped the kit) on properly installed parts only. Return the defective part to us, prepaid, and we will send you a prepaid replacement. We cannot warrant your workmanship and we cannot warrant parts that have been damaged by improper installation.

Check Out All the Parts First.

You will find it is nice to know that everything is there now, rather than at 1:00 am Sunday morning when you are trying to finish the project and you don't know if that last little resistor rolled off the table and the Parakeet ate it or if a part was missing in the first place. Call us at 612 890-3517 (during normal business hours only) if you have questions.

We reserve the right to substitute parts of equivalent (or better) quality in order to maintain reasonable production schedules. For example, you may receive resistors of a greater wattage rating than specified and/or capacitors of a higher voltage rating than specified.

An Overview of the Rebuild Project.

1. First you will use the template supplied and drill the back panel. Next do the mechanical assembly of the back panel, installing the six gold plated phono jacks and the ground lug.
2. Next drill the control mounting holes in the front panel with the template supplied and install the two rocker switches and the precision volume control.
3. Then the front and back assemblies are tied together with the four chassis side rails.
4. Next the main chassis bottom is drilled for the PC card and the terminal strip using the bare PC card as a drill guide.
5. Referring to the *board stuffing guide*, you will install and solder all the parts on the new PC-392 printed circuit board next and then do all the pre-wiring to the board.
6. Then the main chassis sub-assembly is built. This involves installing the rubber feet, the 1/2" spacers, and the completed circuit board on the chassis bottom panel. Now the entire bottom panel assembly is mounted into the front and rear assembly.
7. Referring to the *pictorial diagram*, carefully and neatly wire the AC power section.
8. Make the connections from the switch to the input jacks. Then wire the connections from the circuit board to the controls and jacks and the wiring is completed.
9. Finally install the fuse and the side panels.
10. Think again now about our free checkout service before you ever plug it in. *Mistakes may be much less expensive for us to correct if the unit has never been turned on.* Power to the wrong places because of assembly errors can do expensive non-warranty damage.
11. If you don't want to send the unit to us first, now is the time to give it a trial run. Plug it in and power it up on the bench. If the power switch lights and the 1/2 ampere slow-blow fuse holds you most likely have a working unit. Install the cover and put it through its paces in your audio system. You will be amazed and pleased at how much this great little package enhances your enjoyment of your high fidelity system.
12. Enjoy your great new preamplifier.

If after reading this manual you now have second thoughts, we will build or complete your kit for you. Return the complete Ω mega II Line preamp kit to us and we will build it like our other premium factory wired units. *You must call us before you send it for an estimate of the cost of our services and for our special packaging and shipping instructions.*

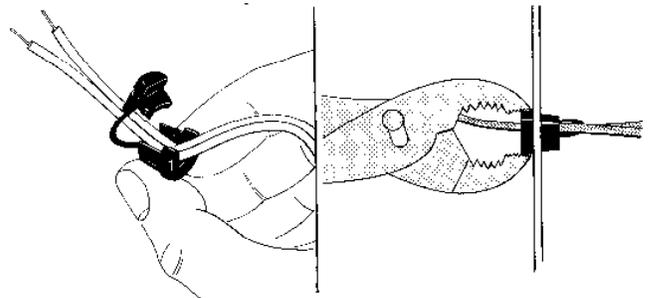
If you are ready to start the project, set aside a clear and well lighted work space and proceed. We think you will have fun.

Mechanical Assembly of the Back Panel.

1. Select the grey flat back panel (6 holes with 2 pressed in nuts on the inside surface). Put a layer of masking tape on the outside surface to protect against scratching in drilling. Cut out and tape the back panel drill guide to the outside. Use this to locate the centers of the eight holes to be drilled. For most

accurate results, first drill very small "starter" holes at each location. Then drill the 6 1/4" holes, the 5/32" hole, and the 1/2" hole. We find that Black and Decker "Bullet Bits" (available at many hardware and discount stores) work very well and make round clean holes without skidding. Pull the masking tape when you are done.

2. Now sand away the paint at the 6 jack locations and at the ground hole on the inside of the chassis so that a good ground contact will be made between the hardware and the chassis.
3. Note that your phono jacks may be supplied with small gold plated solder lugs and small gold plated washers already held on the jacks by their nuts. These small gold plated lugs and washers are not used. Discard them when you remove the nuts to mount the jacks (save the nuts). We provide larger toothed lockwashers for the 6 jacks.
4. Mount the 6 jacks (red at the bottom for the right channel, black at the top for the left channel) with a lockwasher and nut on each. Tighten each firmly but not excessively. Too loose will cause channel dropouts later on, too tight will break the jacks. An 11/32" nutdriver is useful for this operation.
5. Insert a #6 slotted pan head screw into the main chassis ground hole from the outside of the panel. Install a #6 solder lug from the inside followed by a #6 nut on the inside. Tighten the hardware very firmly. This point will later ground the back panel to the circuit board.
6. Refer to the *Pictorial Diagram* and select two 24K Ω 1/2 watt resistors. Install one resistor between the solder lug and the right channel output jack. Install the other resistor between the solder lug and the left channel output jack. Solder only the two leads at the solder lug at this time (but leave room for one more wire). More connections will be made at each output jack later.



7. Select the line cord and the plastic strain relief. Separate the two conductors at the end of the line cord for about 8 inches, and mark the cord with a pencil 9 inches from the end. Twist together the separate strands of each conductor. Bend the cord sharply back on itself at the pencil mark, and squeeze the bend with pliers to form a sharp "V". Install the strain relief at the "V" as shown in the sketch, with the small end of the strain relief nearest the bared wire ends. Use pliers to squeeze the two halves of the strain relief together around the wire, to partially shape the wire before insertion. Then grasp only the larger diameter part of the relief with the tips of the pliers as shown, squeeze it fully closed, and insert the bared ends and the relief from outside the back panel through the remaining hole in the panel. The relief will snap into its locked position when fully inserted.

- Because the hand drilled mounting hole is round, you should now use some two part 5 minute epoxy glue on the strain relief on the inside of the panel to keep the assembly from twisting. Now set the back panel sub-assembly aside and build the front panel.

Mechanical Assembly of Front Panel.

- Select the black curved front panel of the chassis and mask the outside to prevent scratching during drilling. Cut out and tape the front panel drill guide to the outside. Use this to locate the centers of the three holes to be drilled. For most accurate results, first drill very small "starter" holes at each location. Then drill the 3/8" hole and two 15/32" holes and remove the tape.
- Now it is a good idea to temporarily run a strip of masking tape along the top and bottom edges of the front panel during assembly. This will prevent scratching or marring these finished outside surfaces during the assembly process. Remove the tape when the preamp is completed.
- Select the black power switch (three lugs and two LED leads) and insert it into the PS location on front panel from the outside with the three lugs in the orientation shown on the *Pictorial Diagram*. Install with the lockwasher and nut tightened firmly, but not excessively, on the inside of the chassis.
- Mount DPDT (double pole double throw - six lug) switch as shown.
- Mount the 32 position volume control in the VC location with the lugs pointed up. The lockwasher goes on the control first, then the shaft and bushing are inserted through the mounting hole from the inside, and then the nut is screwed on from the outside. Tighten firmly with a pliers or a 7/16" nutdriver.

Now the finished front panel mechanical assembly is connected to the back panel assembly with the four identical chassis rails and eight 1/4" #6-32 Phillips flat head screws.

- Fasten the four frame rails to the four corners of the back panel first with four of the brass colored 1/4" #6-32 Phillips flat head screws finger tight. Rotate the frame rails so that the single hole sides point down for the bottom rails and up for the top rails.
- Now bring the front panel assembly against the four free rail ends and fasten with four black 1/4" #6-32 Phillips flat head screws from the front, again finger tight. Make sure the frame rails are squared off and that the sides with two holes are at the sides of the chassis, and the sides with one hole at the top and bottom. Then tighten the 8 Phillips screws firmly.

Preparation of main chassis.

- Select the chassis bottom (grey large metal panel with back lip and no vent holes). The lip points up. Temporarily fit it into the front-rear assembly. The "kink" at the front slides inside the bottom edge of the front panel, the back lip fits outside the back panel. Fasten with two brass colored flat head Phillips screw in the bottom and one brass colored pan head Phillips screw at the back middle.
- Now locate the blank PC-392 board in the chassis (foil side down) in accordance with the Pictorial Diagram. Leave room for the terminal strip at the corner near the power cord.
- Use the board to mark the location of the three mounting holes (one at the fuse and one on each side). Remove the bottom panel from the chassis and drill 5/32" holes in the chassis

bottom at these locations. Align the board over the holes to check your work. Drill one additional hole for the terminal strip, making sure it will not touch the metal parts of the chassis side or back or the card.

- Mount the terminal strip with a #6 hardware set as shown and re-install the bottom panel in the chassis.

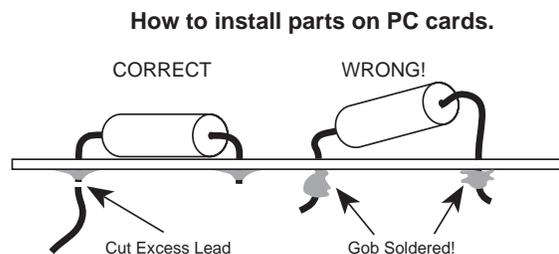
Assembly of the PC-392 Circuit Board.

Refer to the *Board Stuffing Guide* the Parts for PC-392 Circuit Board section of the parts list and prepare to assemble this main circuit board.

All of the parts are installed on the component side and are soldered to the foil side. Note that the diagram shows the board looking down on the component side. Note that the PC card is not shown to exact size or scale.

We assume you already know how to solder or you would not have ordered a do-it-yourself kit. If you find that you just don't have the knack of making clean smooth solder joints that flow from component lead to foil without lumps, solder balls, grey or grainy blobs, or scorch marks then quit while you are ahead and let us do it for you. We are sorry we have to be so serious about this. The finished PC card represents a very substantial portion of the cost of the finished preamplifier. If you build it correctly it will give you many years of reliable service. If you are impatient or sloppy, expensive repairs may be necessary.

The sketch below shows the detail of how parts are properly installed on a PC card.



- Install the 6 diodes in their indicated locations on the board (one set of four 1N4007 power supply diodes near the transformer location and one set of two 1N4744A zener diodes near the supply capacitor locations). Note that each diode has a banded (marked) end. Each diode must be installed with the banded end pointing in the direction indicated on the placement guide.
- Install the zero ohm jumper (small tan body with centered black strip) in its location as shown on the board.
- Install eight 0.5 watt resistors (two 1K, two 10K, two 100K, and two 1M) on this board in the locations indicated flush against the board surface (note that several more resistors will be installed "standing on end" later). *Place each resistor with the four digit value marking facing up so you can read it when the resistor is on the board.* If you cannot read the values later, it makes finding and correcting mistakes nearly impossible. Make sure each resistor goes in the correct place. Mixing them up will damage the circuit operation. The holes for the leads are all 1/2" apart (the first bend if you have a standard resistor lead bending ladder available). Make sure you do not block the mounting holes for not yet installed parts while soldering. If

you do flow solder across and block a pad, careful use of a round wood toothpick and your solder pencil will clear it. Caution, excess heat or force can damage the foil traces and lift pads from the fiberglass board.

4. Install the two 8-pin IC sockets in their locations. Orientate the sockets so the marked ends are located as shown in the drawing. Solder all 8 pins of each socket being careful to avoid solder bridges (flowing a stray strand of solder from one pin to another close by – thus making an erroneous and likely harmful circuit connection).
5. Install the two 300 ohm 2 watt resistors as indicated.
6. Install the two fuse clips (closed ends out) firmly against the board. To hold the clips in place correctly for soldering, turn the board upside down, and push it against a flat surface to hold the clips evenly while soldering. Allow the joint to cool before letting go.
7. Install the nine small bodied capacitors (the four .01 μ F/100V discs, two 100pF/50V, two 0.1 μ F/50V, and the .01 μ F/1KV) on the board in their indicated locations.
8. Install the two 47 μ F/16V non-polar capacitors and the two 22 μ F/16V non-polar capacitors in their locations.
9. Now five resistors are installed standing on end. The two 1K Ω and two 560 Ω are soldered at both ends (the lead is bent over in a U to come back down to the eyelet next to the body eyelet). The single 6.8K Ω 2 watt resistor is installed in the "-LED" hole, body flush against the board with one lead only soldered to the board. The upper lead can be trimmed to about 1/2". A wire will be soldered to the top of the resistor later.
10. Install the two 2200 μ F/16V electrolytic capacitors and the two 2200 μ F/35V making sure the + leads go in the + holes as shown on the stuffing guide. These electrolytic capacitors are polarized. *Backwards installation will destroy the parts. The case is marked with a light colored stripe to identify the - lead.* The + lead is longest. There is one extra hole for each capacitor to allow the board to accommodate two different physical sizes of capacitor for production reasons. Use the holes that are appropriate for the parts supplied in your kit.
11. Install the power transformer. Unless otherwise specified the kit is furnished with a 120V AC transformer with 6 leads. The transformer is installed with the 4 lead edge nearest the diodes, and the 2 lead edge nearest the fuse clip. Only the six holes shown with black dots on the stuffing guide are used with the 120V transformer. *If you ordered the 240V version of the kit, a different transformer will be supplied and you must refer to its supplementary installation instructions. The 240V transformer is not usable on 120V and vice versa.* After soldering, secure the transformer to the board with the two black plastic screws and nuts supplied (the nuts on the bottom of the board).
12. You now have a completed audio circuit card – the “guts” of your new preamplifier. You can use Ronsonol lighter fluid and a toothbrush to dissolve and clean the rosin from your solder connections on the foil side to tidy up your work and make bad joints and solder bridges easy to spot and correct.
13. Install the two special integrated circuits with black heat fins in their sockets on the board. The red dot on each heat fin points towards the nearest end of the PC card (aligns with the marking on the pictorial and the socket). Inspect to insure that no leg folded over or missed the socket. If in doubt use a small

screwdriver between the IC and the socket to lift it up and out, gently straighten any bent legs, and try again.

Pre-wiring the PC-392 Board.

It is necessary to install ten wires on the circuit board before placing it in the chassis as the foil side is not easily accessible afterwards.

The wires are installed from the component (top side) pointing up and are soldered on the foil side. After soldering trim excess lead on the foil side so it cannot touch the chassis bottom when the board is installed.

We have specified wire lengths. The lengths will be slightly on the long side (only the Red Cross has a wire stretcher) so they can be trimmed to fit neatly as desired.

Be careful not to nick the wire when stripping off about 1/4" of insulation. Nicked wires may break off later.

1. Prepare four white wires (two 4", one 4.5" and one 6"). Refer to the Pictorial Diagram and solder one end to the board at the appropriate locations as shown.
2. Prepare three red wires (one 7", one 3.5", and one 4.5"). Refer to the Pictorial Diagram and solder one end to the board at the appropriate locations as shown.
3. Prepare three green wires (one 5" and two 4.5"). Refer to the Pictorial Diagram and solder one end to the board at the appropriate locations as shown. Note that the 5" green is soldered to the top lead of the 6.8K resistor instead of directly to the board.

Chassis Bottom Panel Sub-Assembly.

1. Select the main chassis and install the four adhesive backed rubber feet, one at each exposed corner of the bottom panel.
2. Install the three 1/2" #6-32 hex spacers inside the bottom panel in the three holes you drilled with slotted pan head #6-32 screws. Only secure the spacers finger tight at this time.
3. Place the completed PC-392 board over the spacers. The three screw holes in the board will line up with the spacers. Fasten the board to the spacers with three pan head screws.
4. Tighten all three screws and then tighten the three screws previously installed with the spacers. Go back and forth until both the inside and outside screws are tight.
5. Refer to the pictorial and install the 1/2 amp slo-blo fuse in the clips on the PC board.

AC Power Wiring

Be very careful in soldering to the front panel controls. Excess heat will damage them. Use only enough heat to make smooth solder connections.

1. Select the remaining .01 μ F/1KV disc capacitor. Trim its leads to about 1/2" and bend a hook at each end. Install one lead to power switch lug 4 and the other to lug 5 and crimp both ends. Carefully solder both connections waiting until one lead is cool before soldering the other to avoid overheating the switch. Route the capacitor to the side of the switch making sure the bare leads cannot touch each other or the chassis or lug 3 (which is unused).
2. Select an AC power cord lead and trim it to fit neatly to lug 5 on the power switch after stripping 1/4" of insulation from the end. Fasten the AC power lead to the capacitor lead very close to lug 5 rather than directly to lug 5 itself to avoid heat damage when soldering. Solder the connection making sure no stray strands can short to anything.

3. Trim the other power cord lead to fit to an end (ungrounded) lug on the terminal strip.
4. Select the white wire from the AC In eyelet on the PC card and route this wire to the same ungrounded lug on the terminal strip where the AC power lead is fastened. Solder both at this lug.
5. Select the white wire from the "to PS lug 4" eyelet on the PC card and route it to PS lug 4. As above, fasten to the capacitor lead close to lug 4 to avoid overheating the switch and solder.
6. Select the red wire from the +LED eyelet and the green wire from the -LED eyelet (the 6.8K Ω resistor) and twist the two wires together. Make sure the bare end at the 6.8K Ω resistor cannot come into contact with the power transformer body. Connect the red lead to PS lug 1 and the green lead to PS lug 2 (trim about half of each lead wire off first - they are longer than necessary). Solder both connections and make sure bare wires cannot touch anything else.

Chassis signal wiring.

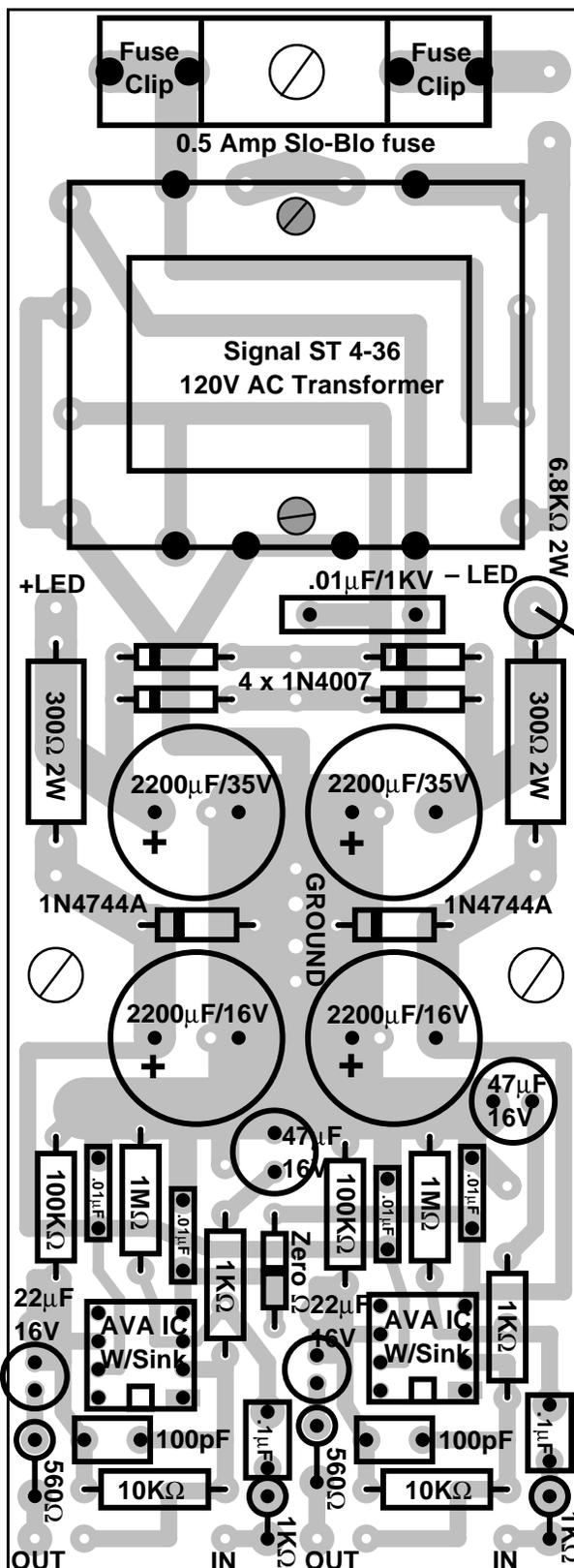
In making solder connections at the phono jacks do not use excess solder. Make sure the solder cannot run into and block the inner hole so that a cable cannot be installed. If in doubt, use a old interconnect cable inserted into each jack before it is soldered to insure that the jack cannot be blocked with solder.

1. Prepare two 11" red wires and two 12" green wires.
2. Connect a red wire to lug 6 of DPDT. Route along the bottom of the chassis and connect the other end to right channel input jack 2. Solder both connections taking care to not overheat the switch.
3. Connect a green wire from lug 3 of DPDT to left channel input jack 2. Solder both connections.
4. Prepare a 3" red wire and connect it from DPDT lug 5 to VC lug 6 and solder both connections.
5. Prepare a 3" green wire and connect it from DPDT lug 2 to VC lug 3 and solder both connections.
6. Connect the remaining 11" red wire from DPDT lug 4 to right channel input jack 1 and solder both connections.
7. Connect the remaining 12" green wire from DPDT lug 1 to left channel input jack 1 and solder both connections.
8. Connect the green wire from L IN on the PC card to VC lug 2 and solder.
9. Connect the red wire from R IN on the PC card to VC lug 5 and solder.
10. Select the longer white wire from GROUND on the PC card and strip about 3/4" of insulation from the free end. Connect it to both VC lug 1 and VC lug 4 and solder both connections.
11. Select the remaining white wire and connect it to the main chassis ground lug on the back panel and solder. Two resistor leads have been previously connected here.
12. Connect the red wire from R OUT on the PC card to the right channel output jack and solder. A resistor lead is already connected here.
13. Connect the green wire from L OUT on the PC card to the left channel output jack and solder. A resistor lead is already connected here.
14. Shake out all the solder blobs, metal filings, and missing tools. Peel the tape from the top and bottom edges of the front panel and dissolve any residue with Ronseal.
15. Install the two side panels with four 1/4" #6-32 black Phillips flat head screws in each.

16. Install the knob (you will need a 1/16" Allen wrench - available at Radio Shack or your local hardware store). The knob should rotate from about 7 o'clock to 5 o'clock.

Final Inspection and Testing.

Don't put your fingers inside with the cover off and the unit plugged in or on. The high voltages could damage you!



Think again now about our free checkout service (you must call us first for return authorization at 612 890-3517) before you ever plug it in. *Mistakes may be much less expensive for us to correct if the unit has never been turned on.* Power to the wrong places because of assembly errors can do expensive non-warranty damage.

If you don't want to send the unit to us first, now is the time to give it a trial run. Plug it in and power it up on the bench. If the power switch lights and the 1/2 ampere slow-blow fuse holds you most likely have a working unit. Install the cover and put it through its paces in your audio system. You will be amazed and pleased at how much this great little package enhances your enjoyment of your high fidelity system.

If the fuse blows or power switch does not light up, you should promptly turn the unit off, unplug it, and contact us for repair service. About 99% of kit problems are assembly errors and our experience is that the builder has a very difficult time discovering their own mistakes. Perhaps have a friend go over the kit and the directions without your help – a second opinion can be very useful.

If all tests well, sign and install your bottom panel label, install the cover and put your new Ω mega II Line preamp into service.

If you have problems, please call (don't write) us at 612 890-3517 and we will do our best to help you.

Enjoy your new preamp and thank you for doing business with us.

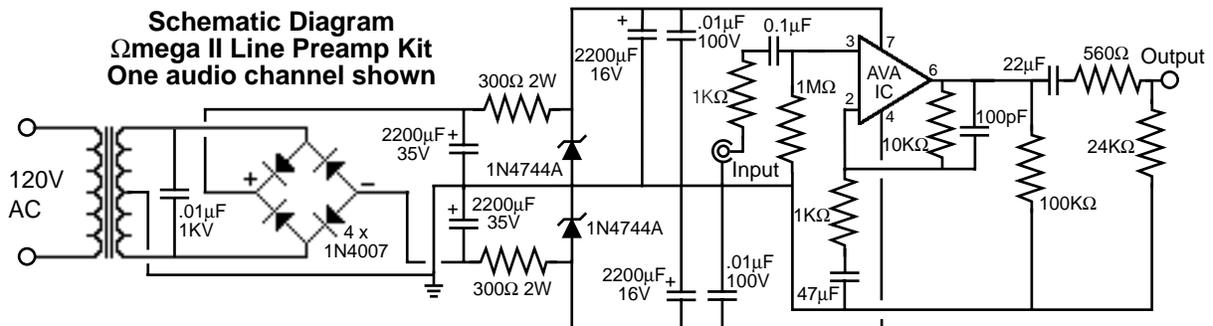
PARTS LIST FOR Ω MEGA II LINE PREAMP PREAMPLIFIER

Circuit Board Parts

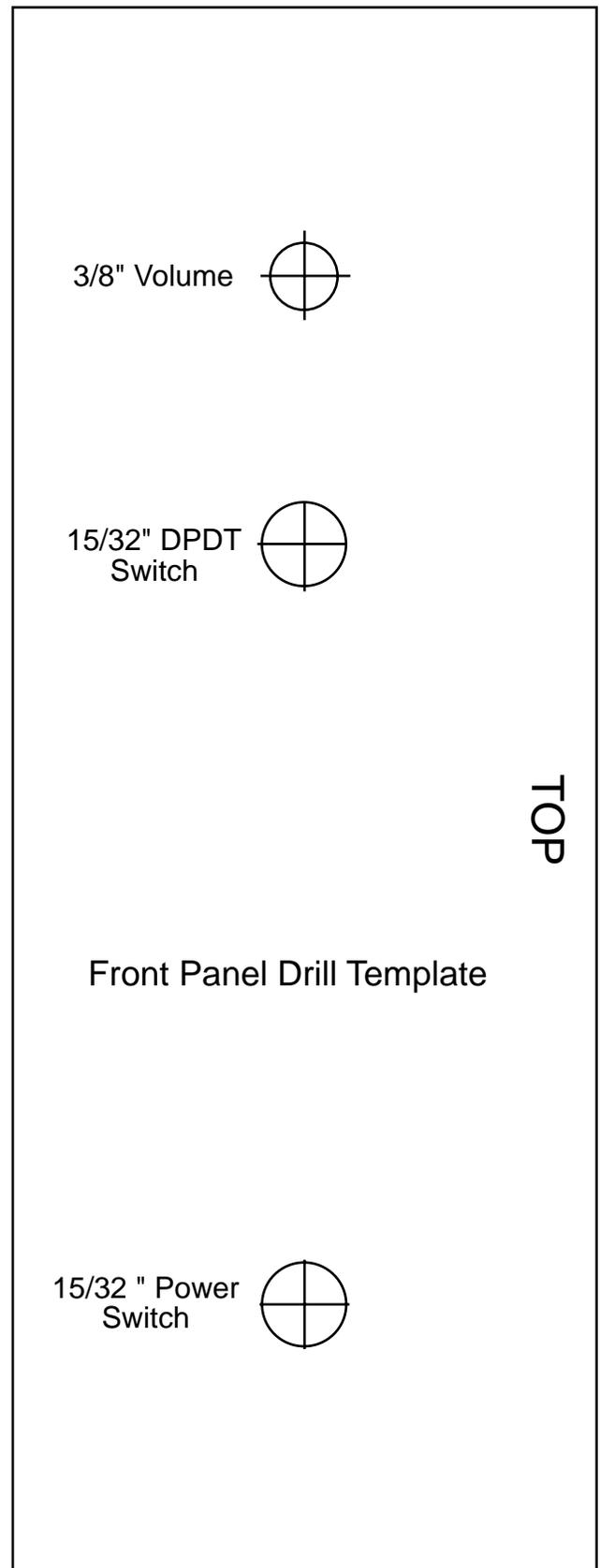
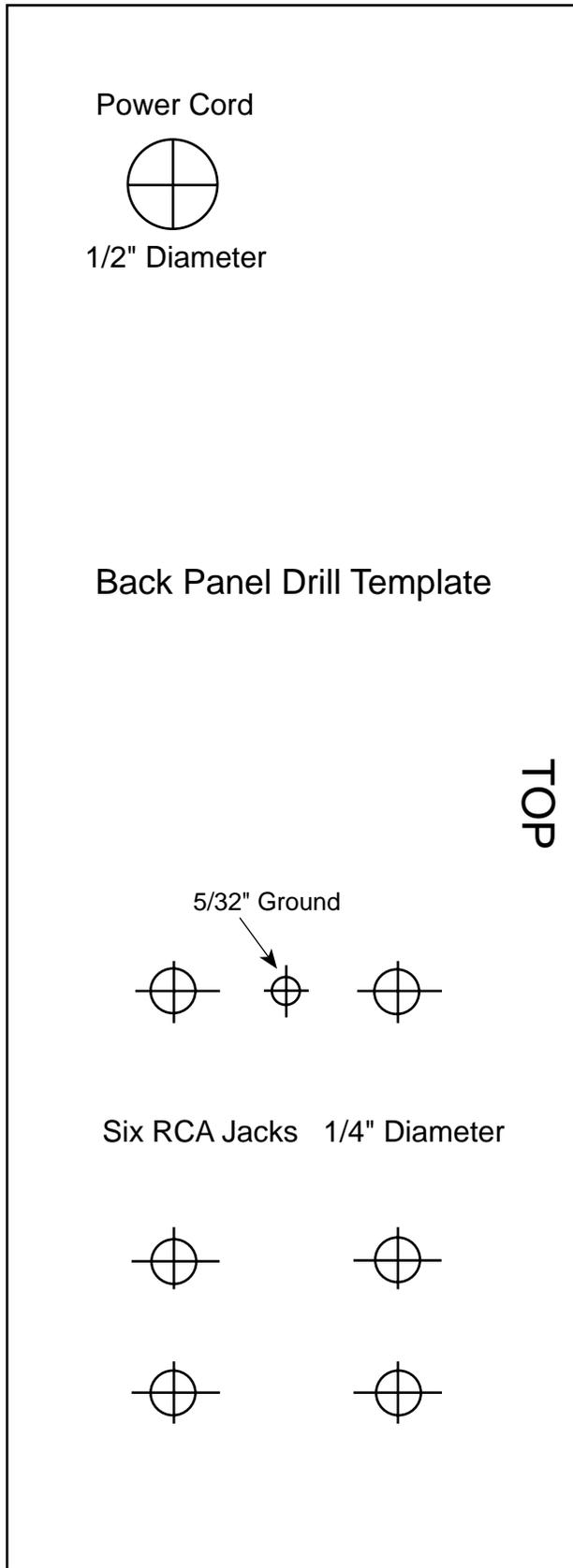
- 1 Circuit Board PC-392
- 1 Zero Ω Jumper
- 2 300 Ω 2W
- 2 560 Ω 1/2W (5620F)
- 4 1 K Ω 1/2W (1001F)
- 1 6.8 K Ω 2W
- 2 10 K Ω 1/2W (1002F)
- 2 100 K Ω 1/2W (1003F)
- 2 1 M Ω 1/2W (1004F)
- 4 1N4007 Silicon Diode
- 2 1N4744A Zener Diode
- 2 100 pF 50V Film(101J)
- 4 0.01 μ F 100V Disc (.01M)
- 1 0.01 μ F 1KV Disc(.01M 1KV)
- 2 0.1 μ F 50V Film(104)
- 2 22 μ F 16V non-polar
- 2 47 μ F 16V non-polar
- 2 2200 μ F 16V electrolytic
- 2 2200 μ F 35V electrolytic
- 2 8-pin IC Socket
- 2 Special Line IC (with heatfin & red dot)
- 1 Transformer Signal 4-36
- 2 Black Nylon Nut
- 2 Black Nylon Screw
- 2 Fuse clip
- 1 0.5A Fuse Slo-blo
- 6 #6-32 1/4" Pan Head Screw
- 3 #6-32 1/2" Hex Spacer

Chassis Mounted Parts

- 1 PFT Chassis Box #030907VTCA
- 1 Pair PFT Side Panels #SPP37
- 14 #6-32 1/4" black Phillips flat head screw
- 1 Alco TRD13D10QC-LR2 lighted rocker switch, black
- 1 0.01 μ F 1KV disc capacitor
- 1 Alco TRD21N10QC DPDT switch, black
- 1 Noble Volume Control
- 1 Alco Black Knob 0.75"
- 3 RCA Phono Jack Red
- 3 RCA Phono Jack Black
- 6 1/4" Lockwasher
- 1 Power Cord 18 gauge non-polarized
- 1 Strain Relief HHS 822
- 1 #6 Solder Lug
- 2 24.3 K Ω 1/2W (2432F)
- 1 3-lug Terminal Strip
- 2 #6-32 1/4" Pan Head Screw
- 2 #6-32 Kep Nut
- 10' Ersin 20 Gauge Multicore Solder
- 4' Wire Red 22 gauge
- 4' Wire Green 22 gauge
- 2' Wire White 20 gauge
- 1 Construction manual
- 1 Serial Number sticker
- 1 Owner's manual



PROPRIETARY NOTICE: This print contains information considered proprietary by Audio by Van Alstine and is furnished on a confidential basis for identification purposes only. September 1, 1992 FVA



Ah, there is just enough room here to sneak in a few extra notes. First, you had better make a copy of this page to use as a drill guide template *before* you cut it up or the pictorial diagram on the other side will be kind of hard to follow. Second, there were four pages (two pieces of paper) for *Audio Basics* last month (there are eight – four pieces of paper – this month). Finally, we do have some excellent values coming in used equipment including a Mos-Fet 150B power amp and an Ω mega II Pat-4 preamp with phase inverter. Call us soon if you are interested. Frank and Darlene Van Alstine

