



# ***EE-101***

## ***ASSEMBLY MANUAL***

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Revision 1p07      July 22, 2018

## Table of Contents

Table of Contents .....	2
Table of Figures .....	3
Section 1: About This Manual .....	4
Who Should Attempt this Project? .....	4
Tools you'll need .....	4
Helpful Tools .....	4
Project Overview .....	4
Important Safety Notes .....	5
About Components .....	5
Recommended Solder .....	5
Warranty .....	5
Section 2: About Building the Kit .....	6
Section 3: Building the Power Supply PCB .....	7
Component Order.....	7
Install the Diodes .....	8
Install the Resistors .....	8
Install the non-polarized Capacitors .....	8
Install the Not so Tall Polarized Capacitors .....	9
Install the Tall Polarized capacitors.....	9
Install the Regulators and Heat Sinks .....	9
Install the voltage select jumpers.....	11
Power Supply Inspection .....	12
Section 4: Chassis Assembly and Power Wiring.....	12
Protect your EE-101 .....	12
Install the feet.....	12
Install the Power Switch and Power Entrance Connector .....	13
Wire up the power.....	13
Install the Great Ground Kit .....	14
Install the Pilot Light .....	15
Install the Power Supply and Toroidal Transformer.....	15
Fasten the transformer in place .....	17
Testing the Power Supply .....	18
Build the Phono Preamp .....	19
Connect the Plus/Minus 12-volt wiring .....	20
Wire up the Volume Control and Output Connectors .....	20
Install the Wall.....	21
Install the Volume Control.....	22
Install the PHONOZ PCB.....	22
Install the Output RCA Jacks.....	23
Install the knob.....	23
Final Test and Configuration .....	23
Using the EE101 Phono Preamp.....	24

## Table of Figures

Figure 1-Empty the power supply components into a soup bowl.....	7
Figure 2-Component side of power supply PCB before loading.....	7
Figure 3-Assembling Heatsink to a Regulator.....	9
Figure 4-Solder heat sink mounting rods to retain the heat sink .....	10
Figure 5-Completed power supply with 120-volt jumpers installed .....	10
Figure 6-Jumper installation for 120 Volt Operation .....	11
Figure 7-240 Volt jumper locations.....	11
Figure 8-Install 4 feet with 4-40x5/16" silver colored screws.....	12
Figure 9-Install power entrance connector and power switch .....	13
Figure 10-Install #6 toothed lug on 18 AWG green wire .....	13
Figure 11-Attach ground wire to chassis with 6-32x3/8" black oxide screw and 6-32 nut .....	13
Figure 12-Install the black wire and bend the lug for the ground wire so it clears the black wire .....	14
Figure 13-Add the Great Ground kit to the back panel .....	14
Figure 14-Install the pilot light .....	15
Figure 15-loop and tape the unused red and black wires.....	16
Figure 16-Dress the transformer wires along the side .....	17
Figure 17-Connecting power supply FASTONS.....	17
Figure 18-Transformer mounting arrangement .....	18
Figure 19-Pre-wire the input RCA jacks .....	19
Figure 20-Installing RCA input jacks.....	20
Figure 21-install the RCA input jacks with the wires you installed in the previous step .	20
Figure 22-Wiring the volume control .....	21
Figure 23-connecting PHONOZ to shorter volume control shielded cables .....	21
Figure 24-Installing the wall.....	22
Figure 25-volume control mounting hardware .....	22
Figure 26-Detail showing RCA jack installation.....	23
Figure 27-Assembled EE101 with the lid removed.....	24

## **Section 1: About This Manual**

This manual gives the information needed to build all the variations of Akitika LLC's EE-101 Stereo Preamp. It covers:

- EE-101, a complete stand-alone moving-magnet phono preamp based on the acclaimed PHONOZ phono-section, with an internal power supply, selectable cartridge loading, selectable gain, selectable high pass filter, and a volume control.
- EE-101NP, which contains just the enclosure and power supply (NP stands for No Phono Preamp).
- EE101MECH, just the enclosure and enclosure hardware, power entrance connector, and power switch. It does not include the power supply.

### ***Who Should Attempt this Project?***

You can build this kit if you can:

1. Solder (using normal rosin core solder and a soldering iron).
2. Use simple hand tools like screwdrivers, wire cutters, and pliers.
3. Read and follow directions.

It helps if you:

1. know a bit about electronics, or
2. have a friend who knows a bit about electronics
3. can get to YouTube to watch a few helpful videos about the assembly process (none are posted as of this version of the manual).

### ***Tools you'll need***

You'll need the following tools:

1. Phillips screwdriver (#1 and #2)
2. Pliers or nut drivers suitable for #4 and #6 hardware
3. needle nose pliers (helpful, but not strictly necessary)
4. pencil type soldering iron of 25 to 50 Watts (no huge honking soldering guns or blowtorches)
5. wire cutters and strippers
6. multi-meter to measure power supply voltages and confirm resistor values (strongly recommended)!

### ***Helpful Tools***

These tools aren't strictly necessary, but they make building the kit easier.

1. magnifying glass, if you're over 42!
2. lead bending jig to form axial component leads to the correct span for insertion in the PCB.

### ***Project Overview***

The project consists of the following steps:

1. Building these circuit boards:
  - a. Power Supply

- b. Phono Preamp
2. Install and wire the circuit boards, switches, connectors, and power transformer into the chassis.
3. Wire up the volume control.
4. Finish mechanical assembly.

### **Important Safety Notes**

By purchasing, using, or assembling this kit, you have agreed to hold Akitika LLC harmless for any injuries you may receive in its assembly and/or use. To prevent injuries:

- Wear safety glasses when soldering or clipping wires to prevent eye injuries.
- Always unplug the power before working on the amplifier.
- Large capacitors hold lots of energy for a long time. Before you put your hands into the amplifier:
  - Pull the AC plug!
  - Wait 2 full minutes for the capacitors to discharge!
- Remove jewelry and rings from your hands and wrists, or anything that might dangle into the amplifier.
- If working on the equipment with the power on, keep one hand in your pocket, especially if you're near the power supply or power supply wires. This can prevent serious shocks.
- Build with a buddy nearby. If you've ignored all the previous advice, they can dial 911 or get you to the hospital.
- Read and understand the safety manuals of all the tools you use.

### **About Components**

We reserve the right to make design/or component changes at any time without prior notification.

### **Recommended Solder**

The kit must be assembled with 60/40 Rosin Core solder. The recommended diameter is 0.031-0.032 inches. Among many such sources of solder, I have used KESTER part number 32117. It is a 1-pound spool of solder, which is *much* more than you'll need to assemble the PR-101 kit. This is standard 60% Tin 40% lead solder with a rosin core.

### **Warranty**

With the exception of fuses, Akitika will replace for free any parts of a correctly assembled kit that fail within one year of the date of purchase when the kit has been used in home stereo applications. It is the responsibility of the kit builder to install the replacement part(s). This warranty applies to the original purchaser only. It does not apply to units that have been physically or electrically abused, modified without prior factory authorization, or assembled with other than 60/40 Rosin Core solder. Akitika LLC's liability shall in no event exceed the cost paid to Akitika LLC for the kit.

## Section 2: About Building the Kit

Yes, I know you want to ignore this section, and jump right into building the kit.

However, please ***take a minute and read the advice of this section.*** I've condensed it into bullets so that even you guys who are in a hurry can benefit.

- There are at most (depending upon your kit) 2 PCB's to build:
  - Power supply
  - PHONOZ Preamp board
- Stop any time you're feeling confused, tired, or anxious. Taking breaks at those strategic times will keep the build enjoyable and greatly enhance your chances of first-time success.
- Finish one PCB before you build the next.
- A soup bowl is your friend. Before you build a board, carefully empty the parts *for **only that board*** into a broad, flat, light colored soup bowl. That makes it easy to find the parts and keeps them from getting lost.
- A digital ohm-meter is the easy way to make sure that you've picked the right resistor. It's a great cross-check on the resistor color code. Measure twice and solder once!
- A lead-bending jig can make for quicker, neater assembly. It's certainly not necessary.
- Is something in this manual confusing? Does something look wrong? Send your questions by email to [dan@akitika.com](mailto:dan@akitika.com). You'll help yourself and everyone who builds the kit.

## Section 3: Building the Power Supply PCB

This section details the process of building the power supply circuit board. Begin by carefully emptying the contents of the envelope marked “EE-101 Power Supply” into a broad soup bowl, as shown below. In general, you’ll start with the components that lay closest to the board, working your way towards the taller components.



Figure 1-Empty the power supply components into a soup bowl

### Component Order

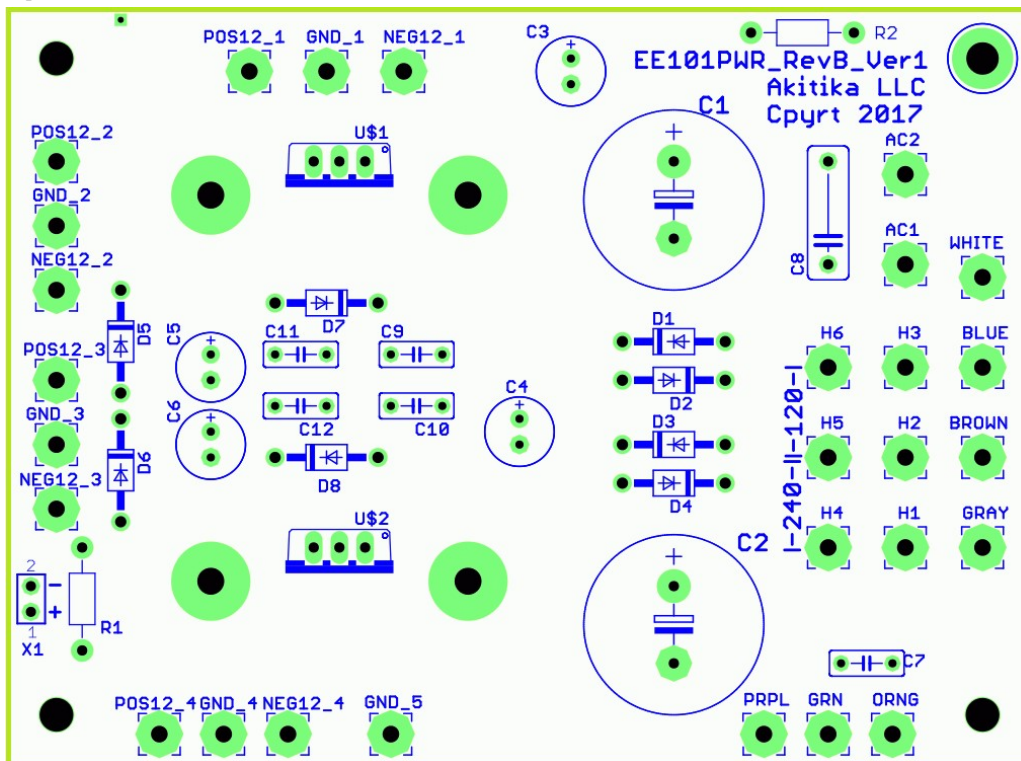


Figure 2-Component side of power supply PCB before loading

You’ll notice that the component designations in the directions don’t go exactly in order. We have grouped them so that all components with the same value appear together. This makes assembly easier. You’ll find in the parts kit that similar parts, e.g. 3 1K resistors, are typically (though not always) taped together.

## ***Install the Diodes***

In general, you install axial leaded components (like the 1N4004 diodes) by placing the body on the silk screen side of the board, and the leads through the indicated holes. Bend the leads over on the back of the board to keep the component from falling out until you solder them in place. Try to bend the leads in a direction that won't lead to solder bridges between traces that should remain disconnected.

We recommend the following procedure:

1. Insert all components of the same value or type
2. Bend the leads as described above.
3. Solder the leads on the back of the board.
4. Clip the leads.

Track your progress by placing a check-mark in the done column as you install each component.

Diodes – Polarity is important!			
Make sure that the banded ended of the diode matches the banded end of the silk screen			
Use 0.4" spacing for lead-bending jig (optional)			
Designation	Type	Rating, Marking	Done? (✓)
D1	1N4004	400 PIV 1 Amp, 4004	
D2	1N4004	400 PIV 1 Amp, 4004	
D3	1N4004	400 PIV 1 Amp, 4004	
D4	1N4004	400 PIV 1 Amp, 4004	
D5	1N4004	400 PIV 1 Amp, 4004	
D6	1N4004	400 PIV 1 Amp, 4004	
D7	1N4004	400 PIV 1 Amp, 4004	
D8	1N4004	400 PIV 1 Amp, 4004	

## ***Install the Resistors***

Resistors			
Use 0.4" spacing for lead-bending jig (optional)			
Designation	Value	Color Code	Done? (✓)
R1	2K00	Red, Black, Black, Brown, Brown	
R2	10	Brown, Black, Black, Gold, Brown	

## ***Install the non-polarized Capacitors***

The capacitors we install in this section can be installed in either orientation.

Non Polarized Capacitors			
Designation	Value	Rating, Marking	Done? (✓)
C9	0.1 $\mu$ F	100 V Film, $\mu$ 1J100	
C10	0.1 $\mu$ F	100 V Film, $\mu$ 1J100	
C11	0.1 $\mu$ F	100 V Film, $\mu$ 1J100	
C12	0.1 $\mu$ F	100 V Film, $\mu$ 1J100	
C7	0.01 $\mu$ F	400 V Mylar, 10n (stands for 10 nano-Farads)	
C8	0.033 $\mu$ F	300 V AC, box shaped cap	



### ***Install the Not so Tall Polarized Capacitors***

It's important to install these caps with the proper polarity. The negative end of the cap is marked with a minus sign. The silk screen on the board marks where the positive end of the cap goes. Make sure that the negative end of the cap is away from the plus sign on the circuit board.

Polarized Capacitors – polarity matters!			
Designation	Value	Rating	Done? (✓)
C3	22 $\mu$ F	35 V electrolytic	
C4	22 $\mu$ F	35 V electrolytic	
C5	22 $\mu$ F	35 V electrolytic	
C6	22 $\mu$ F	35 V electrolytic	

### ***Install the Tall Polarized capacitors***

Polarized Capacitors – polarity matters! Double check the rated voltage!			
Designation	Value	Rating	Done? (✓)
C1	3300 $\mu$ F	35 V electrolytic	
C2	3300 $\mu$ F	35 V electrolytic	

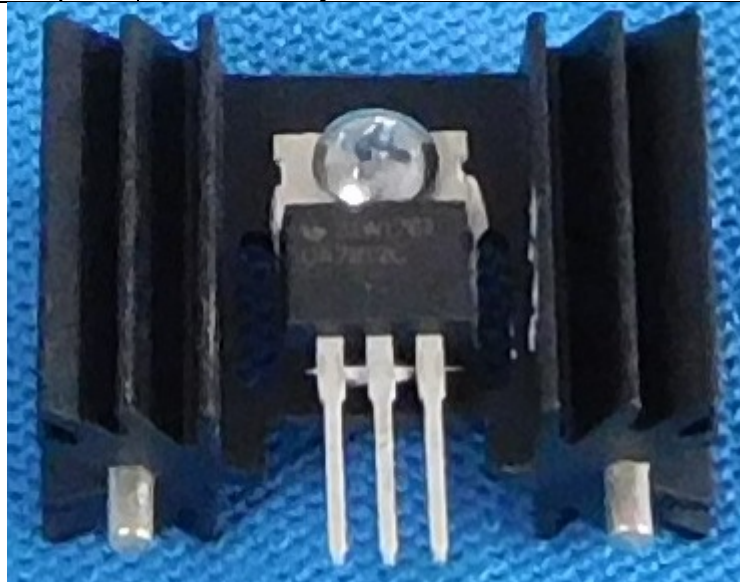


Figure 3-Assembling Heatsink to a Regulator

### ***Install the Regulators and Heat Sinks***

For each of the two regulators (U\$1 and U\$2), the installation process is the same, with the result as shown in Figure 3 **Error! Reference source not found..**

- Smear a thin film of thermal compound on back of the regulator. *Be careful not to get thermal compound on the leads of the regulator.*
- Fasten the regulator to a heat-sink using a 6-32x3/8" Phillips pan-head screw and a 6-32 keps nut.
- Tighten the hardware finger tight while keeping everything at right angles. This will let you tweak the position of the regulator so that everything will fit.

- Follow the silk screen outlines and install each heatsink/regulator assembly into its correct place on the board, as indicated in the table below. Double check that you have the correct regulator in the correct spot.
- The silver colored mounting rods on the bottom of the heat sink fit into pads on the PCB.
- Hold the heat sink flush against the PCB and solder the mounting rods to the mounting tabs. Note that it takes a lot of heat and time, as you have to warm up the heat sinks pretty well to get the solder to flow.
- Solder the regulator leads into the PCB.
- Tighten the screw and nut that hold each regulator in place.

<i>Regulators – orientation matters! Double check the part numbers. <b>They are not interchangeable!</b></i>			
Designation	Value	Rating	Done? (✓)
US1	7812	12 V positive regulator	
US2	7912	12 V negative regulator	

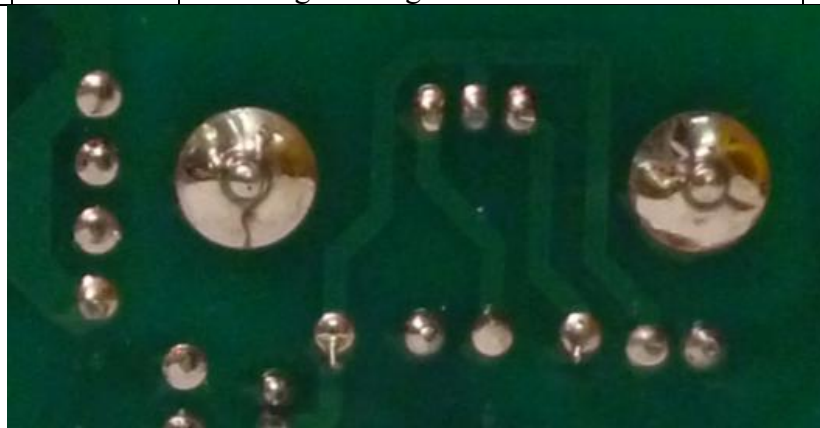


Figure 4-Solder heat sink mounting rods to retain the heat sink

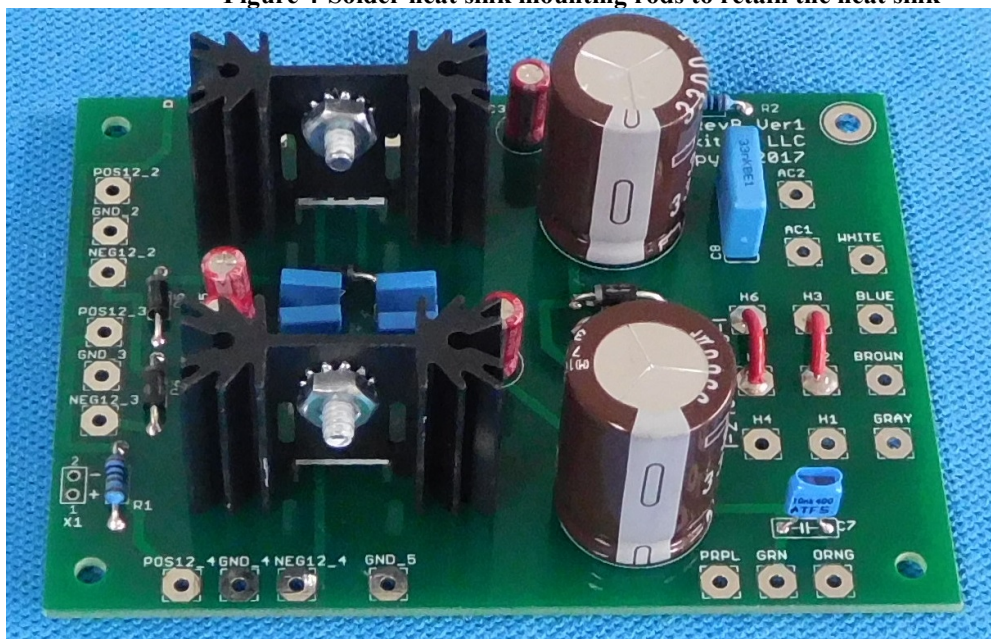


Figure 5-Completed power supply with 120-volt jumpers installed

## Install the voltage select jumpers

The EE-101 may be wired for either 120 Volt or 240-volt operation. This is done by adding jumpers to the power supply board in the marked places. Use the supplied red 22 AWG wire.

The jumper locations for 120 and 240 Volt operation are shown in the following figures.

- For 120 Volts, use Figure 6.
- For 240 Volts, use Figure 7.

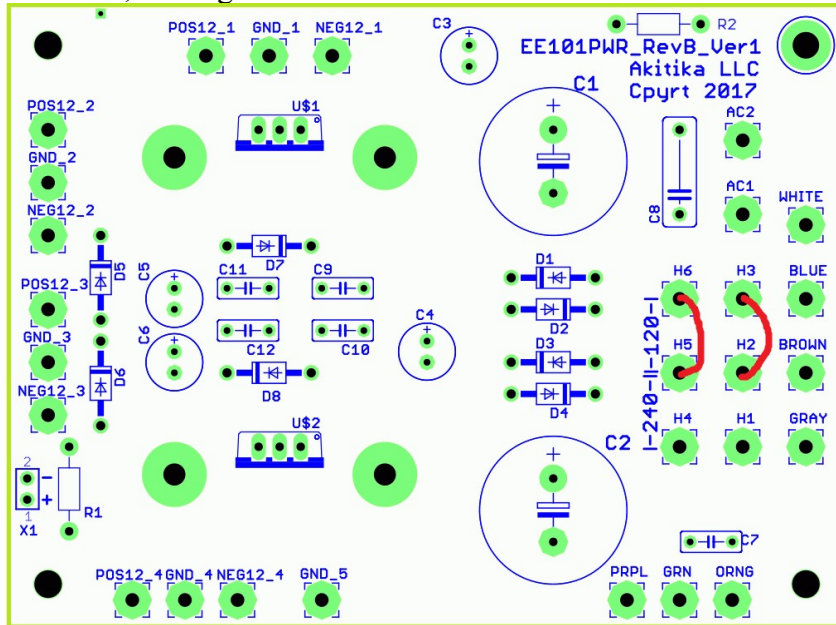


Figure 6-Jumper installation for 120 Volt Operation

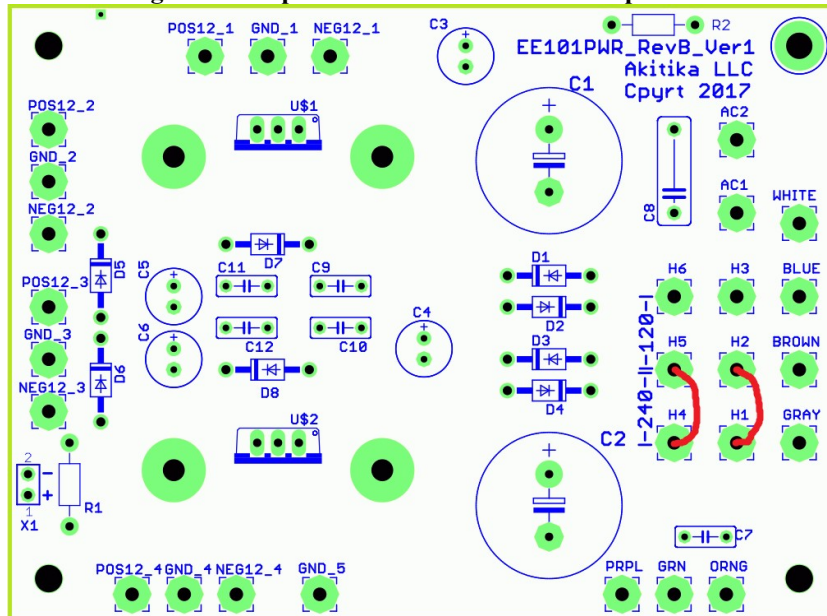


Figure 7-240 Volt jumper locations

## ***Power Supply Inspection***

Recheck your work to verify:

1. Correct diode polarity.
2. Correct polarity of polarized capacitors
3. Correct location of power supply voltage selection jumpers for the intended power source (either 120V or 240 V)
4. Verify that all installed components have been soldered.

## **Section 4: Chassis Assembly and Power Wiring**

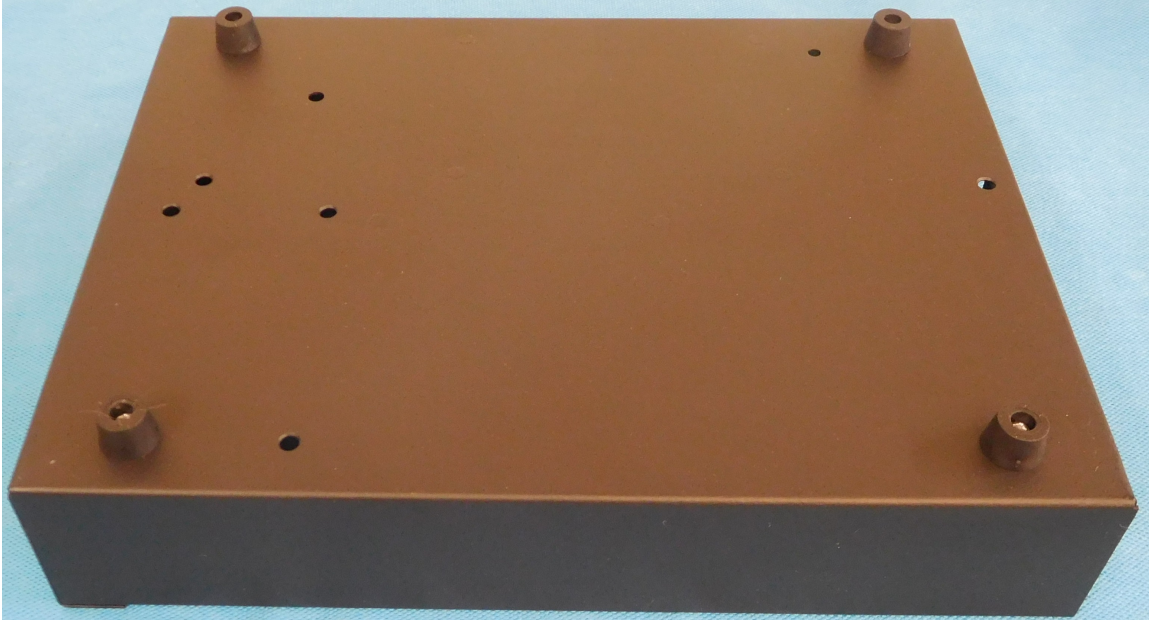
We'll take a detour from PCB assembly to do some of the chassis assembly. This will give you a safe way to power up and test the power supply.

### ***Protect your EE-101***

Spread a towel over your work surface before you begin the steps outlined in this section. That towel will prevent you from scratching the finish of your EE -101 during these assembly steps.

### ***Install the feet***

Install the four feet into the corners of the bottom of the chassis using 4-40 x 5/16" Phillips head screws (these are zinc-plated, so will look silver). Snug the screws, but don't over-tighten. Installing the feet will protect the bottom of the chassis from damage.



**Figure 8-Install 4 feet with 4-40x5/16" silver colored screws**

## ***Install the Power Switch and Power Entrance Connector***



**Figure 9-Install power entrance connector and power switch**

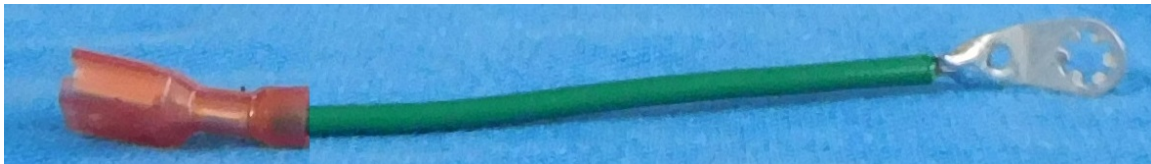
Install the power entrance connector. Watch the orientation. The fuse drawer must be at the bottom of the chassis.

Install the power switch. Make sure that the 0 on the switch is down, and the | on the switch is up.

The holes for both components are snug, and there will be a bit of paint on the edges of the holes that may make it a bit difficult to insert them. With a bit of persistence, both will install, perhaps after a few colorful words.

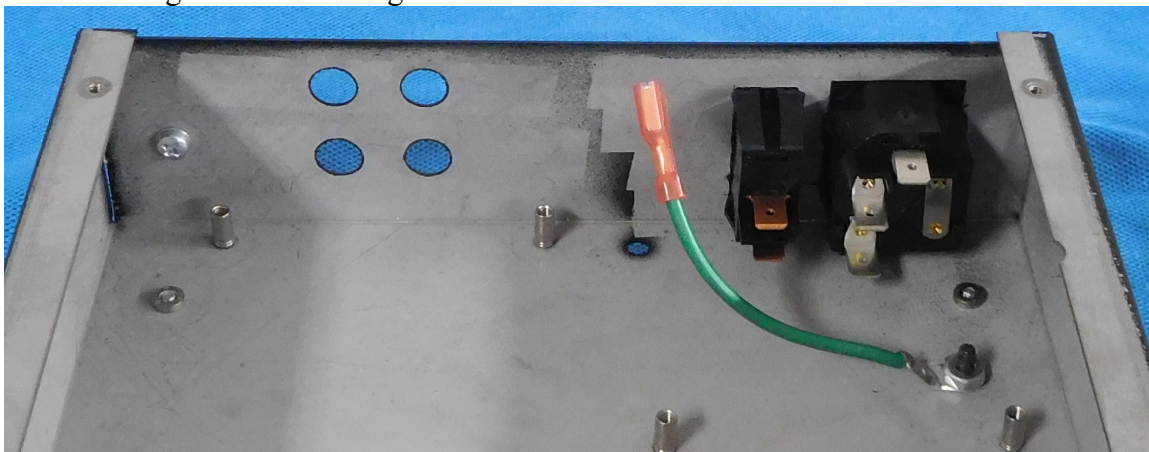
### ***Wire up the power***

Locate the green 18 AWG wire with a FASTON on one side. Strip ¼” of insulation from the plain end. Form a loop and crimp that end around a #6 toothed lug. Solder the lug to the wire.



**Figure 10-Install #6 toothed lug on 18 AWG green wire**

Fasten the lug to the chassis using a 6-32x3/8” black oxide screw and a plain 6-32 nut. Orient the lug as shown and tighten the nut well.



**Figure 11-Attach ground wire to chassis with 6-32x3/8” black oxide screw and 6-32 nut**

Add the black wire with FAST-ONS on both ends between the power entrance connector and switch as shown in Figure 12.

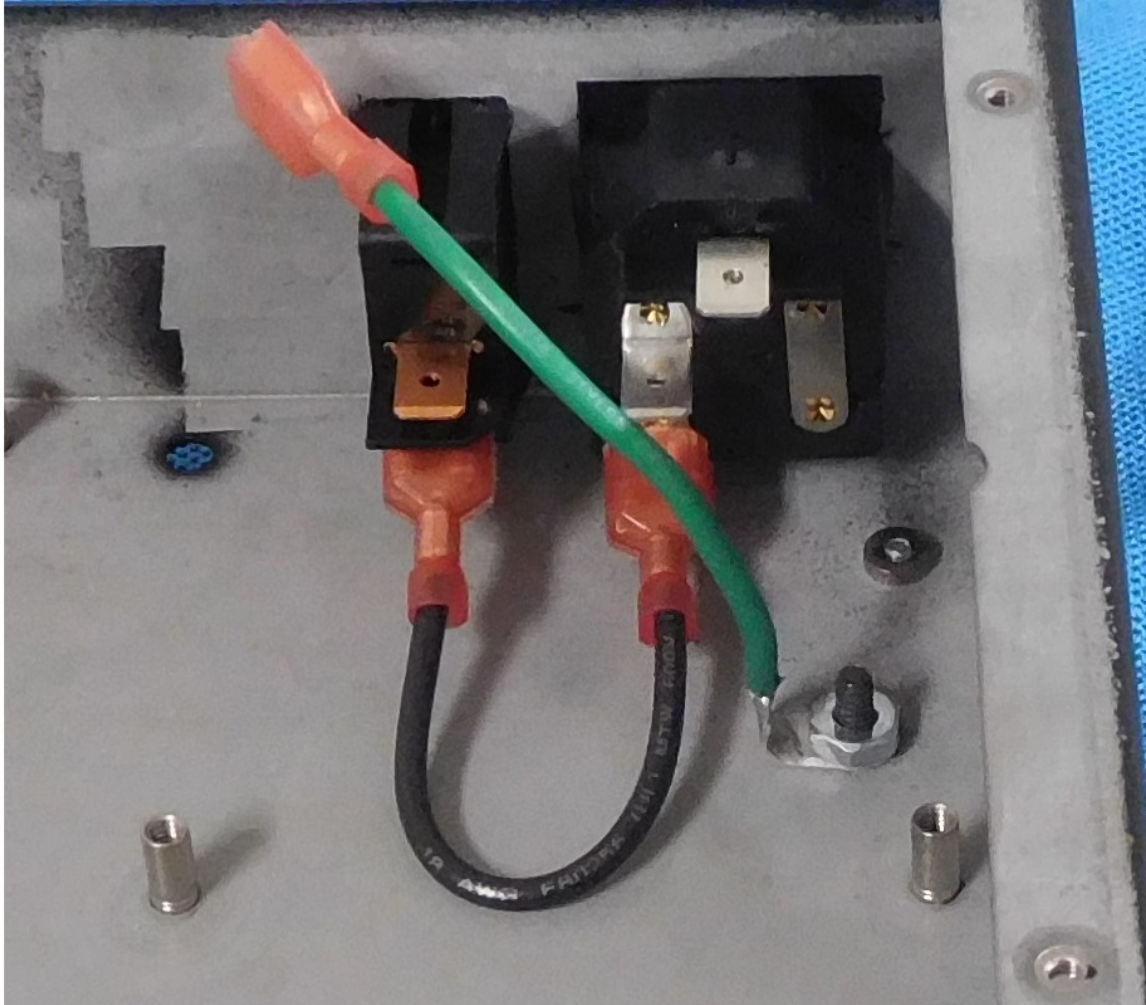


Figure 12-Install the black wire and bend the lug for the ground wire so it clears the black wire

### ***Install the Great Ground Kit***

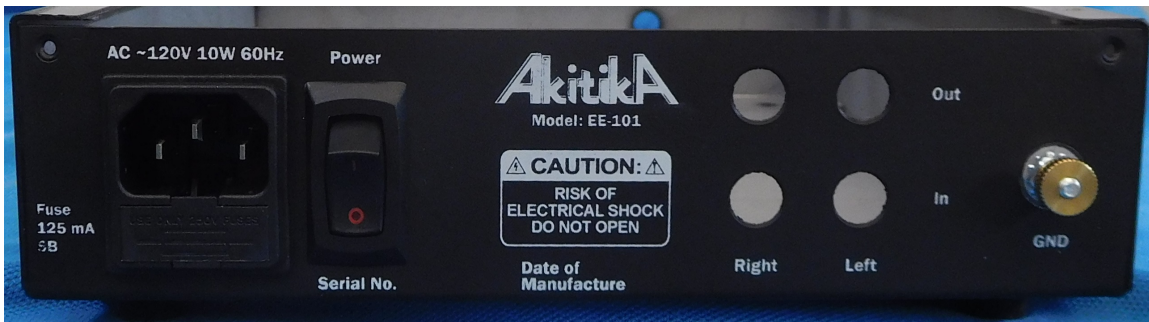


Figure 13-Add the Great Ground kit to the back panel

Locate the Great Ground Kit shipped as part of the EE101. Then:

1. Install the screw from the inside of the chassis.
2. Install the 6-32 keps nut from the outside of the chassis.
3. Tighten the screw and nut (5/16" nut-driver) pretty well to assure good contact with the chassis.

4. Spin the brass thumb-nut onto the great ground assembly, but only make it finger tight.

### ***Install the Pilot Light***

Insert the leads of the pilot light through the front panel. Thread the red and black wire through the supplied mounting nut. Tighten the nut finger-tight, then do your best to reach in there with needle-nose pliers to snug up the mounting nut. It just has to be tight enough so that the pilot light doesn't rattle in the hole.



Figure 14-Install the pilot light

### ***Install the Power Supply and Toroidal Transformer***

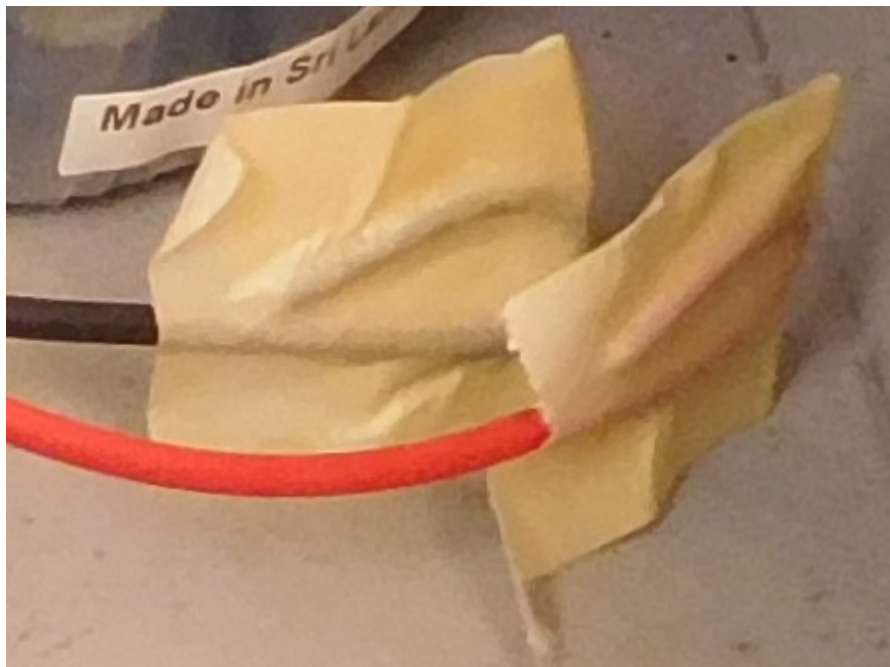
Locate the following items:

1. The power supply PCB you assembled earlier.
2. The short 18 AWG white wire with a FASTON on the end.
3. The short 18 AWG black wire with a FASTON on the end.
4. The toroidal power transformer.

Install the power supply and toroidal transformer by performing the following steps:

1. Strip ¼" from the white FASTON wire.
2. Insert the stripped end of the white wire into the component side of the AC1 hole of the PCB. Solder it on the solder side.
3. Strip ¼" from the black FASTON wire.
4. Insert the stripped end of the black wire into the component side of the AC2 hole of the PCB. Solder it on the solder side.
5. Connect the transformer for the power supply:
  - a. Cut the purple, green, and orange wires to 8.5" length.
  - b. Strip 1/4" of insulation from the end of each wire.
  - c. Twist and tin each wire.
  - d. Braid the three wires together.
  - e. Insert the purple wire from the component side of the board into the hole marked PRPL. Solder it on the solder side.
  - f. Insert the green wire from the component side of the board into the hole marked GRN. Solder it on the solder side.
  - g. Insert the orange wire from the component side of the board into the hole marked ORNG. Solder it on the solder side.
  - h. Cut ½" from the end of both the red and black wires. They will not be used. Cover the end of the red wire with a piece of masking tape. Cover the end of the black wire with a piece of masking tape.

- i. Leave the brown and blue wires full length. If one wire is a bit longer than the other, shorten the longer wire. There should be about ¼” of uninsulated wire at the ends. Twist and tin each end separately. Twist the brown and blue wires together (but keep the bare ends separate).
- j. Insert the brown wire from the component side of the board into the hole marked BROWN. Solder it on the solder side.
- k. Insert the blue wire from the component side of the board into the hole marked BLUE. Solder it on the solder side.
- l. Leave the gray and white wires full length. If one wire is a bit longer than the other, shorten the longer wire. There should be about ¼” of uninsulated wire at the ends. Twist and tin each end separately. Twist the gray and white wires together (but keep the bare ends separate).
- m.

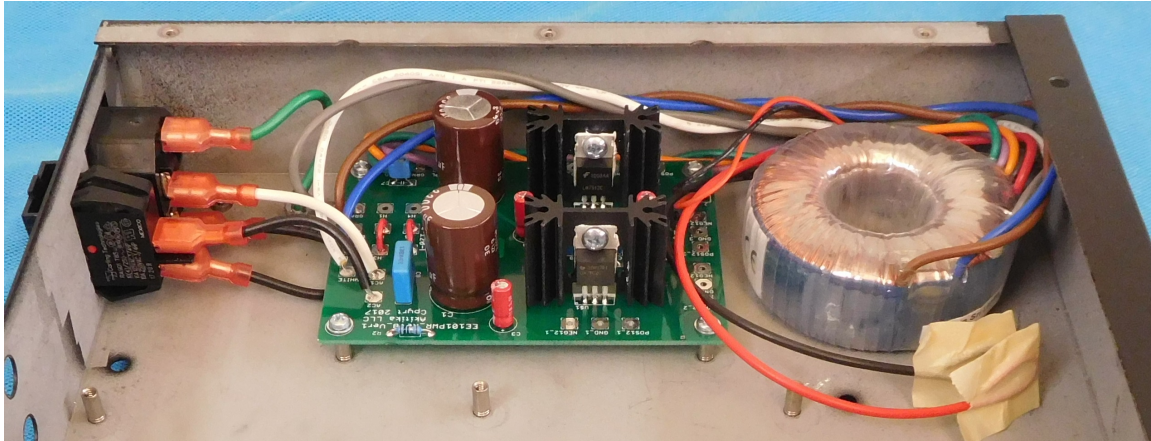


**Figure 15-loop and tape the unused red and black wires**

- n. Insert the gray wire from the component side of the board into the hole marked GRAY. Solder it on the solder side.
  - o. Insert the white wire from the component side of the board into the hole marked WHITE. Solder it on the solder side.
6. Connect the pilot light LED to the power supply:
- a. Solder the red wire from the black/red pair to the X1 lead marked with the plus sign. Insert it from the component side and solder it on the solder side.
  - b. Solder the black wire from the black/red pair to the X1 lead marked with the minus sign. Insert it from the component side and solder it on the solder side.
7. Set the power supply and transformer into the enclosure.
- a. Guide the transformer wires along the side of the enclosure.

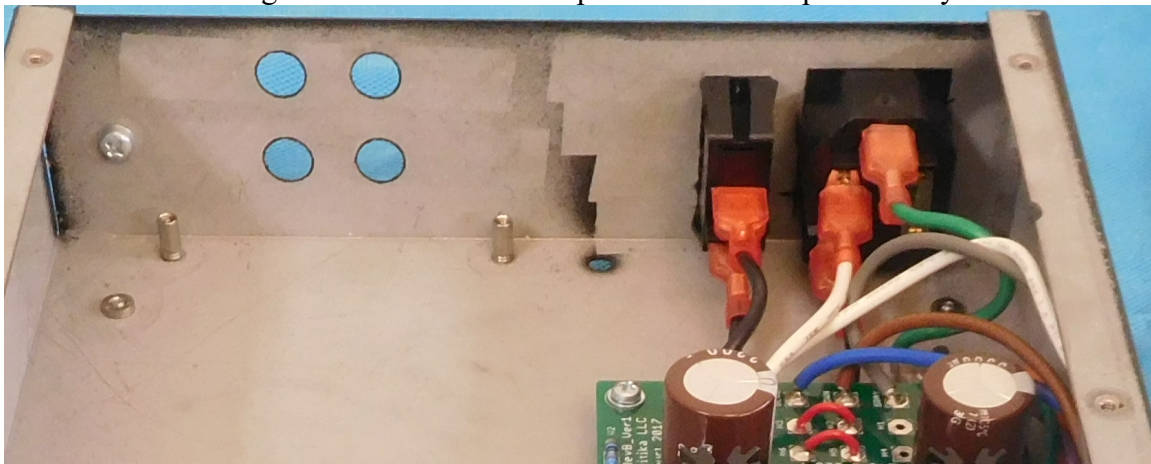


- b. Insert four 4-40x1/4" sems screws through holes at the ends of the PCB, through the standoffs in the box. This will keep the PCB safely located for the next test.



**Figure 16-Dress the transformer wires along the side**

8. Connect the black FASTON to the top switch terminal.
9. Connect the white FASTON to the center terminal on the power entry connector.
10. Connect the green FASTON to the top terminal on the power entry connector.



**Figure 17-Connecting power supply FASTONs**

### ***Fasten the transformer in place***

Locate the following items that are used to mount the transformer to the chassis.

1. Rubber spacer, about 2" in diameter, qty 2
2. 8-32x1.5" screw
3. 8-32 nut
4. Dished metal washer, about 2" in diameter

Use them as shown in Figure 18 to hold the transformer in place. The dished washer depression points toward the chassis floor.

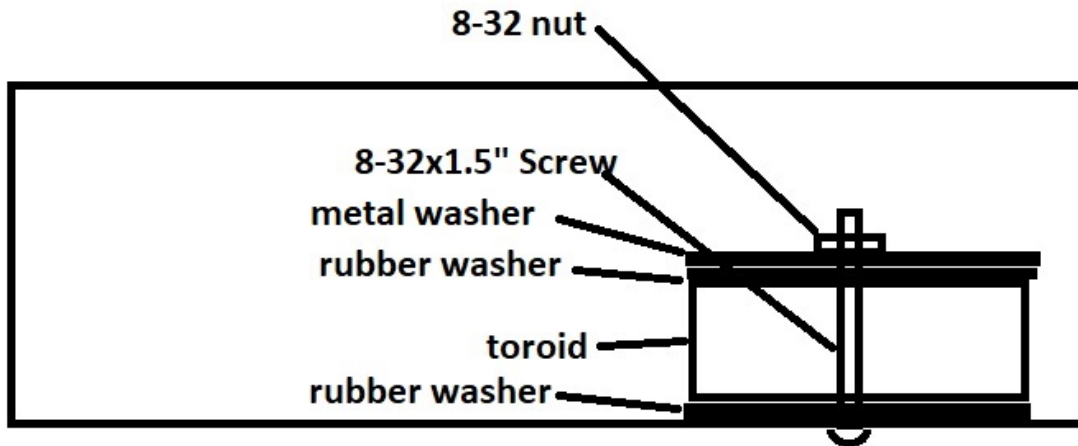


Figure 18-Transformer mounting arrangement

## Testing the Power Supply

Locate the following items:

1. IEC power cord
2. Fuses<sup>1</sup>
  - a. 5x20 mm 250 mA slow blow, qty 2 for 120 Volt operation, or
  - b. 5x20 mm 125 mA slow blow, qty 2 for 240 Volt operation

To test the power supply:

1. Open the fuse drawer in the power entry connector. Install both fuses, the active fuse and the spare fuse.
2. Turn off the power switch.
3. Connect the power cord to the IEC connector and to the wall socket.
4. Turn on the power switch. The following things should happen:
  - a. The pilot light should illuminate
  - b. Measure between any POS12 and Ground. The DC voltage should be between 11.4 and 12.6 Volts DC.
  - c. Measure between any NEG12 and Ground. The DC voltage shall be between -11.4 Volts and -12.6 Volts.

If the power supply passes the tests, go on to the next section. If it didn't pass the tests:

1. Make sure that the wall socket is live.
2. Remove the power cord and check to see if the fuse has blown.
3. If the voltages are present, but funny...double check the regulators to assure that you haven't swapped them.
4. If none of those items help, send an email to [dan@akitika.com](mailto:dan@akitika.com), with the name of this produce (EE101) and a description of the symptoms. Pictures of the front and back of the power supply PCB would also be helpful.

<sup>1</sup> Versions of this manual prior to 1p06 called for a 125 mA fuse for 120 Volt operation and 62 mA for 240 volt operation. As of the 1p06 manual this was changed to 250 mA for 120 Volts and 125 mA for 240 Volts to prevent nuisance fuse blowing.

## Build the Phono Preamp

If you are building the EE101 (enclosure, power supply and phono preamp) then you will build the phono preamp using the directions for building the phono preamp which you will find on the Akitika web site. Please note the following differences:

1. Don't install the mounting brackets supplied with the PHONOZ kit. You will instead use the 4-40x1/4" SEMS screws provided to mount the PHONOZ kit. Note that although there are 5 stand-offs in the chassis where the PHONOZ will be installed, they are only 4 mounting holes in the PHONOZ PCB. Do not install the assembled PHONOZ kit at this time. It will be installed later.
2. Don't install the shielded cable that connects to the output of the PHONOZ. You will pre-wire those cables to the volume control in the next section.
3. Don't install the black front panel of the PHONOZ<sup>2</sup>. Instead, you will mount the RCA phono socket inputs into EE101 left and right input positions.
  - a. Pre-wire the jacks using 1" pieces of bare wire harvested from the ends of resistors used to build the phono preamp. Please refer to Figure 19.
  - b. Install the phono socket with the RED ring into the Right Channel input (bottom) position.
  - c. Install the phono socket with the BLACK ring into the Left Channel input (bottom) position.
  - d. Figure 20 shows the placement of the RCA jacks, shoulder washer, and nut.

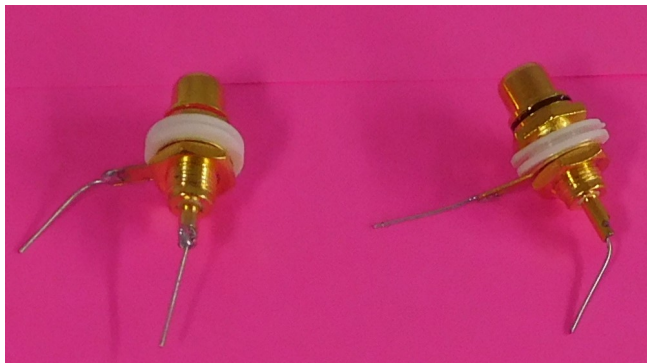
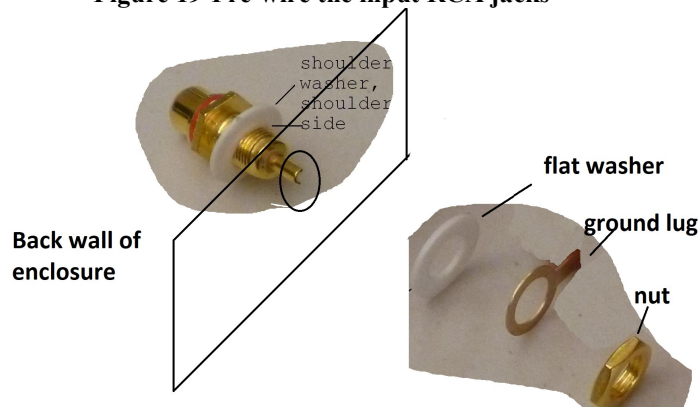
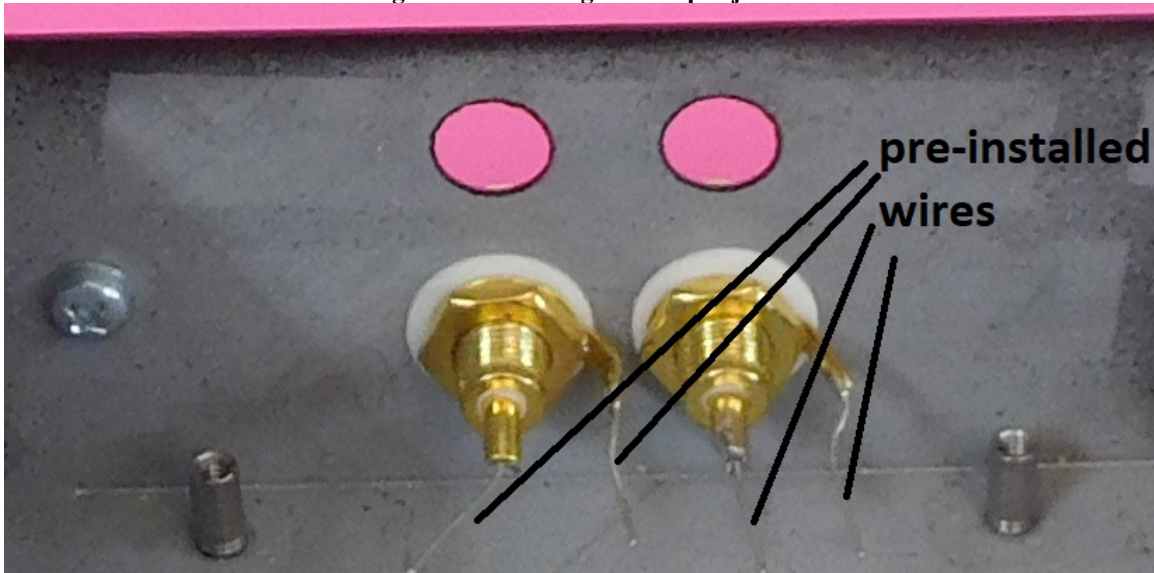


Figure 19-Pre-wire the input RCA jacks



<sup>2</sup> If I've packed things correctly, it won't be included with the version of the PHONOZ kit provided as part of the EE101.

**Figure 20-Installing RCA input jacks**



**Figure 21-install the RCA input jacks with the wires you installed in the previous step**  
If the insulating washers and RCA jacks are installed correctly, there will be no connection between the grounds of the RCA jacks and chassis at this step of the assembly. Use an ohmmeter between the GREAT GND terminal and the ground lugs of the RCA jacks. It should show infinite ohms, indicating an open circuit.

### ***Connect the Plus/Minus 12-volt wiring***

The normal build-procedure for the PHONOZ included installation of power wiring (+12, -12, and ground). Connect those power wires to the POS12\_1, NEG12\_1, and GND\_1 terminals of the power supply PCB. Insert the wires from the component side and solder them on the solder side.

### ***Wire up the Volume Control and Output Connectors***

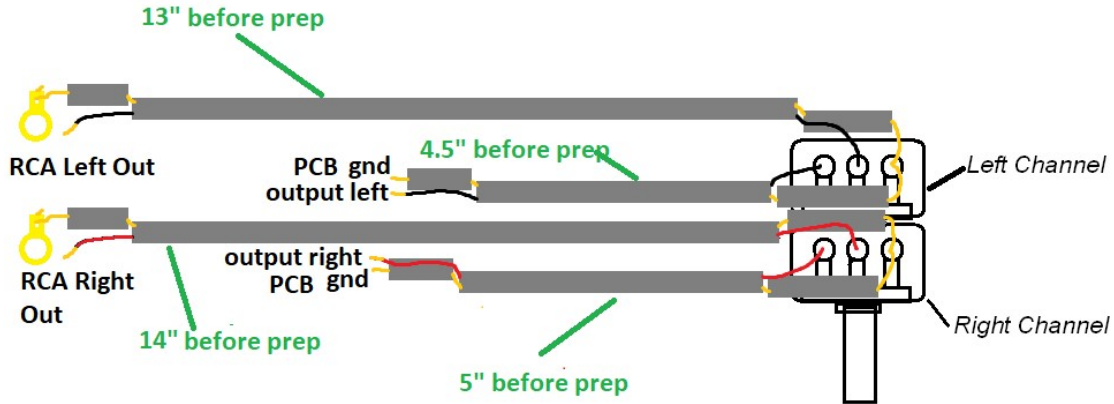
Locate the following items:

1. VC-102 Volume Control Kit. It contains a volume control, knob, and the shielded cable used to hook everything up.
2. The GP101 kit, which contains two gold-plated RCA jacks (includes insulating washers, mounting nuts, and ground lugs):
  - a. One with a RED ID ring for the right channel.
  - b. One with a Black ID ring for the left channel.

Pre-wire the volume control and output jacks according to the following diagram.

Prepare 4 pieces of shielded cable according to Appendix 1 and Figure 22.

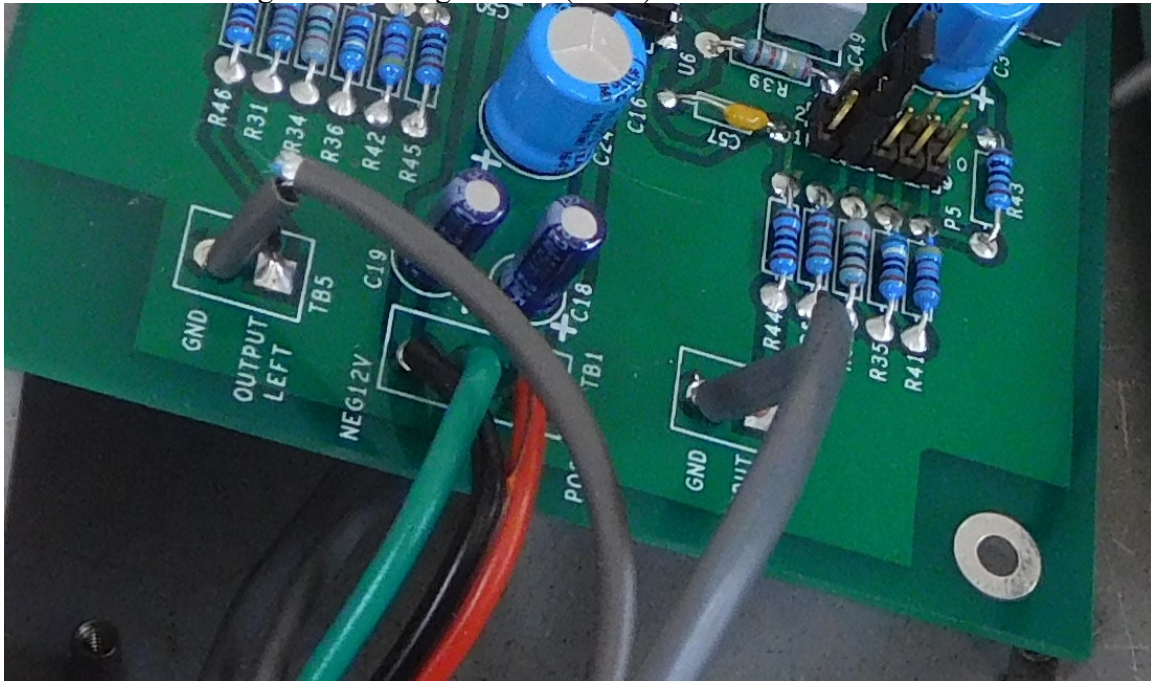
- For right channel cables, use the red wire and the drain.
- For left channel cables, use the black wire and the drain.



**Figure 22-Wiring the volume control**

Solder the short shielded cables to the PHONOZ PCB outputs. Insert the wires from the component side and solder them on the solder side:

- Solder the right channel drain wire to the PHONOZ TB2 GND. Remember to slip a 3/8" piece of the outer jacket over the drain wire to prevent short circuits.
- Solder the right channel signal wire (red) to TB2 OUTPUT RIGHT.
- Solder the left channel drain wire to the PHONOZ TB5 GND. Remember to slip a 3/8" piece of the outer jacket over the drain wire to prevent short circuits.
- Solder the right channel signal wire (black) to TB5 OUTPUT RIGHT.



**Figure 23-connecting PHONOZ to shorter volume control shielded cables**

### ***Install the Wall***

The wall installs to the right side of the stand-offs. It's a little of a finagle to install it, so here are the steps:

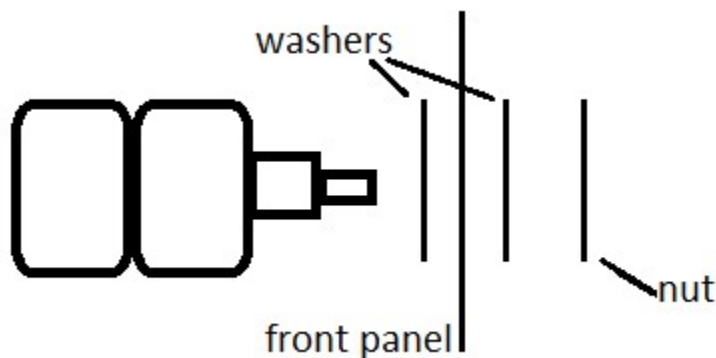


**Figure 24-Installing the wall**

1. The notched portion of the wall goes toward the front of the enclosure.
2. Pass the power supply wires (+12, -12, and ground) through the notch, routing them along the floor of the chassis.
3. Hold the wall in place by installing two 4-40x3/16" black oxide under-cut screws into the countersunk holes in the bottom of the chassis. They will mate with two PEM fasteners in the wall.

### ***Install the Volume Control***

Before installing the volume control, remove the locating tab. Use a pair of pliers to bend and remove the tab. Install the volume control into the front panel. Configure the control, washers, front panel, and nuts as shown. Point the terminals of the volume control away from the power supply. Tighten the nut.



**Figure 25-volume control mounting hardware**

### ***Install the PHONOZ PCB***

Slide the PHONOZ PCB into place. Form the RCA jack leads so they can slide into the PCB. Make sure to keep them long enough to penetrate the holes in the PCB, but not so long as to short out on the chassis below. Install the two 4-40x1/4" SEMS screws that are closest to the back panel to hold the PHONOZ PCB in place.

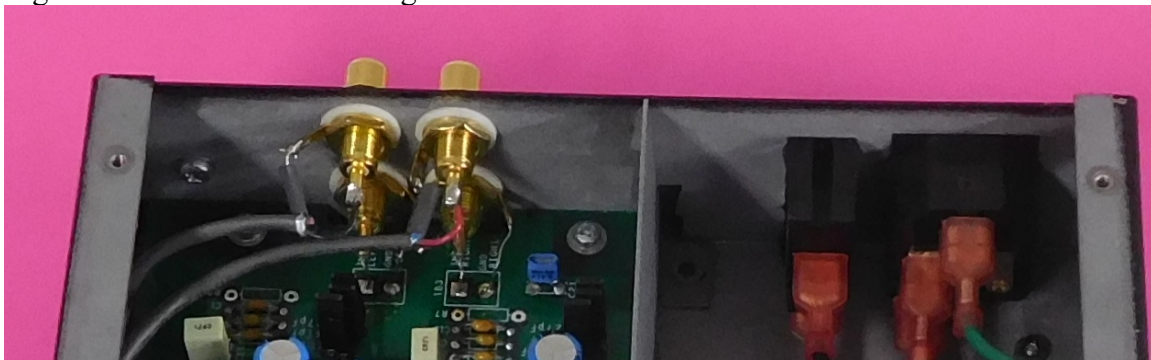
Solder the 4 jack wires into their respective holes on the PCB.

### ***Install the Output RCA Jacks***

Install the left channel (black) RCA output jack using the same hardware configuration as shown in Figure 20. If you followed the previous wiring recommendations, the ground lug has already been attached to the drain wire. Now solder the center conductor (black wire) of the shielded cable to the center pin of the left channel RCA jack. Form the shielded cable along the outside wall of the phono side of the EE101 enclosure.

Install the right channel (red) RCA output jack using the same hardware configuration as shown in Figure 20. If you followed the previous wiring recommendations, the ground lug has already been attached to the drain wire. Now solder the center conductor (red wire) of the shielded cable to the center pin of the right channel RCA jack. Form the shielded cable along the outside wall of the phono side of the EE101 enclosure.

Now install the remaining two 4-40x1/4" SEM screws through the holes in the PCB. Tighten all four of the mounting screws.



**Figure 26-Detail showing RCA jack installation**

### ***Install the knob***

Set the volume control fully counterclockwise. Loosen the set-screw on the volume knob and install it on the volume control. Point the indicating arrow at 7 o'clock and then tighten the set-screw.

### ***Final Test and Configuration***

Inspect your work. Make sure that everything is snug and in the proper place. Check the settings of the PHONOZ jumpers. Refer to the PHONOZ manual for recommended settings of the jumpers.

Power on the EE101 and re-check the Plus and Minus 12 Volt rails of the power supply. They should still show as 12 $\pm$ 0.6 volts if everything is assembled correctly. Everything should remain cool.

If the power test is successful remove the power cord.

Install the cover using 10 of the provided 4-40x3/16" black-oxide undercut screws.

### ***Using the EE101 Phono Preamp***

Always turn the volume control down before powering up or down the EE101. This prevents start-up and/or shut-down transients from reaching your power amp and speakers.

You may be startled when you use the phono preamp. In most applications, when properly built and applied, it will be very close to dead quiet. Remember to hook up the phono ground wire to the great ground connection.



**Figure 27-Assembled EE101 with the lid removed**



## Appendix 1 – Shielded Cable Preparation

This section tells how to prepare the end of a shielded cable.

1. Cut the shielded cable to the overall required length.



2. Use a utility knife with a new, sharp blade to cut the plastic jacket of the shielded cable 3/4" back from the end. Hold the blade perpendicular to the cable, and draw it across the cable ***lightly*** as you rotate the cable along its long dimension. This creates a scored line through the plastic jacket. With a sharp blade, not much pressure is needed. You may need a bit of practice to get the feel.
3. There's an alternate method to remove the jacket if you have automatic wire strippers. The 10-12 notch of these strippers perfectly removes the outer jacket without harming the inner conductors. Your strippers may be different, but you can probably find a similar notch on your automatic strippers. If you use this method, inspect the results carefully to make sure that it doesn't nick the inner wires.





4. If you've scored the jacket carefully, you can separate the jacket at the score line without using tools. Pull the insulating jacket off, exposing the cable, showing the foil shield, the drain wire, and the fuzzy string. The result is shown here, with the foil shield showing. Save the plastic insulating jacket. It will be used later to insulate the drain wire.



5. Cut off the fuzzy string.



6. Separate and twist the drain wire.



7. Peel back and remove the foil. Remove the plastic wrap from the red and black wires. The drain (bare wire), red, and black wires are exposed now that gray insulating jacket, foil shield, and plastic over-wrap have been removed.
8. Save the gray outer jacket as it will be used (perhaps cut to half length, about 3/8") to insulate the bare drain wire.

# Power Supply Schematic

