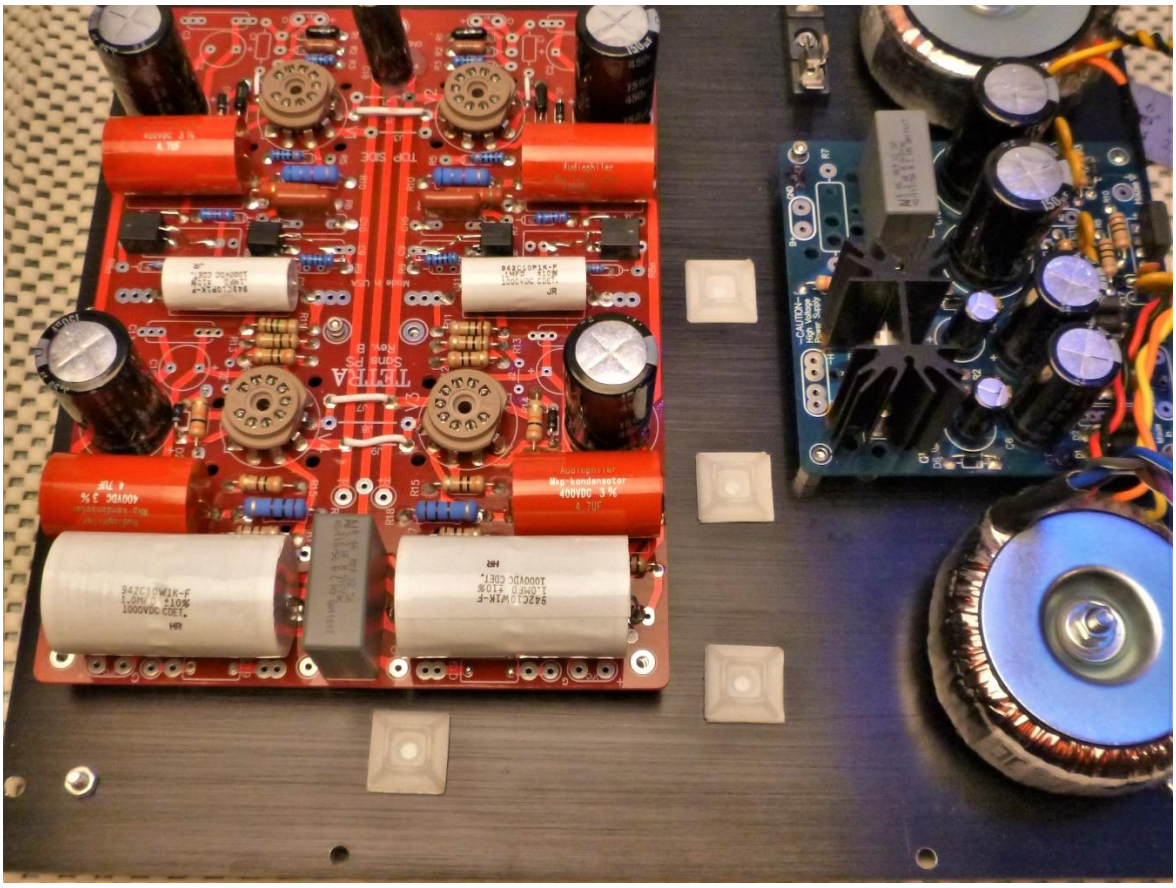
Board – Chassis Integration Part 3

Wall of Sound.ca DIY all tube phono preamp project

Tools and supplies required:

Same as Part 1

Place the amplifier board and the power supply board on their respective standoffs on the chassis bottom plate. See below. Put two screws in each to keep them in position.



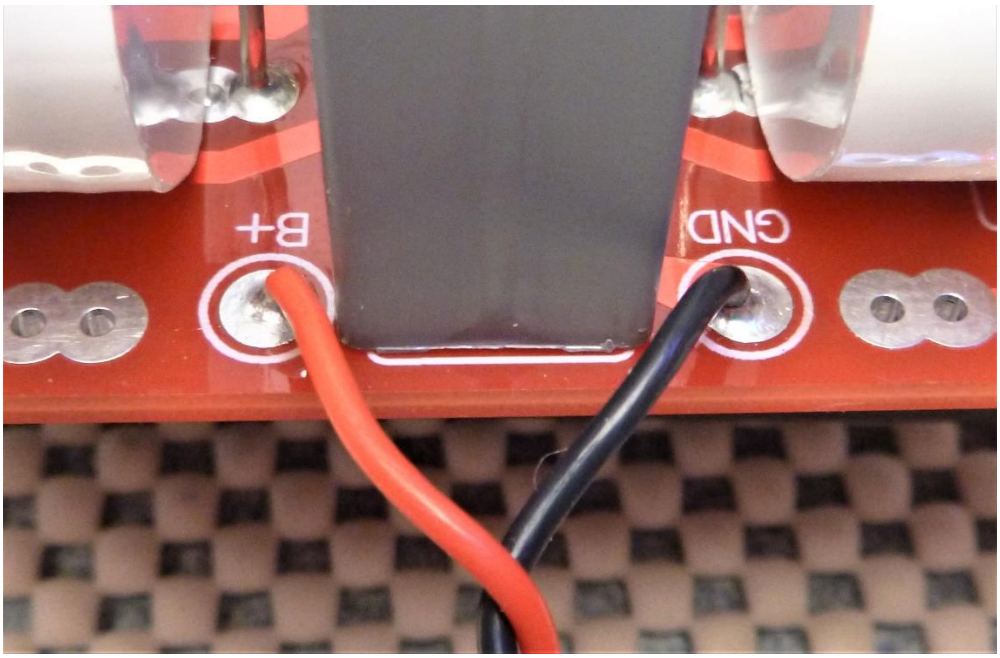
With an alcohol dampened paper towel wipe the bottom panel between the two boards and in front of the amp board.

Apply four cable tie mounts to the bottom panel as shown above.

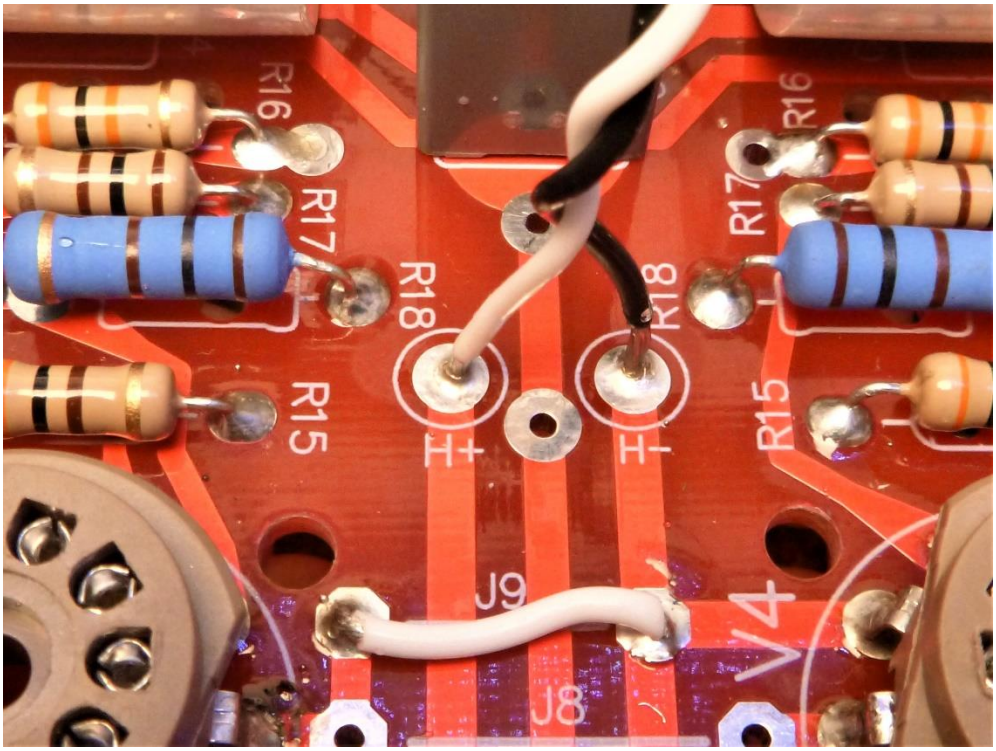
Remove the boards from the bottom panel and set aside.

Twist two pairs of hook up wire each 23” (60cm) long. Use at least 3 different colours to avoid confusion as one set will be for filament voltage (12 VDC) and the other for B+ (~300VDC).

Solder one pair, the red and black in this instance, to the **B+** and **GND** pads near the output end of the board as shown below.



Solder the other pair, white and black in this instance, to the **H+** and **H-** pads near V3 and V4.



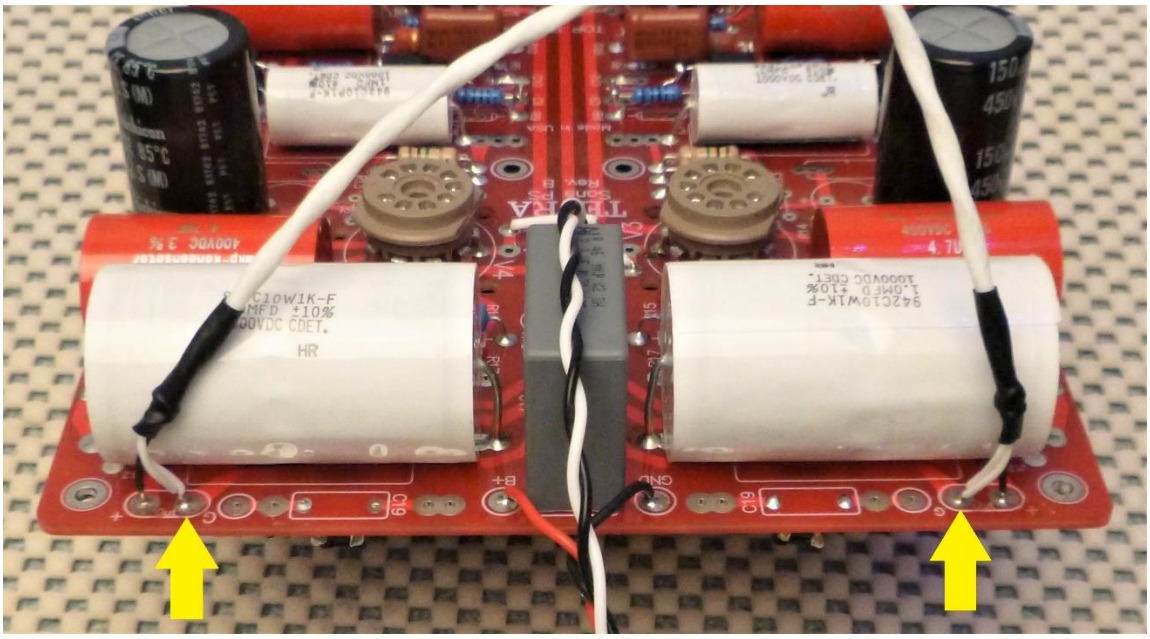
Cut two lengths of shielded cable (a twisted pair of hookup wire is OK) 28” (70cm) long.

Prep the shielded cables by soldering a wire to the shield. Strip the ends and twist the one connected to the shield to one of the ones inside the shield (white leads as shown below). Melt a small amount of solder the stripped ends.

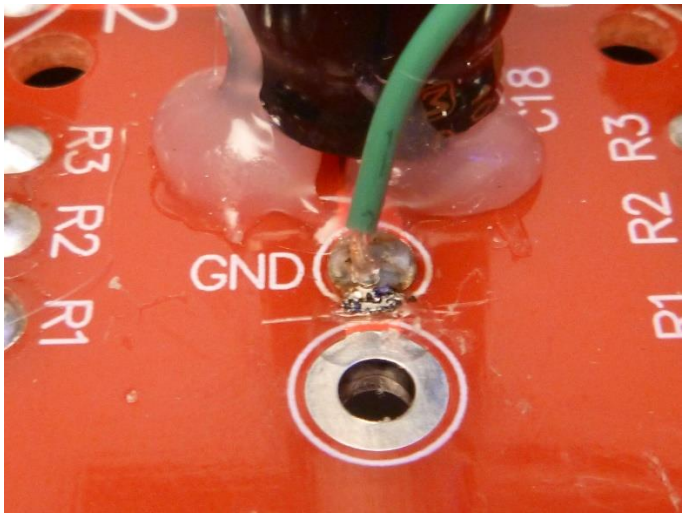
Cover with heat shrink tubing as shown above.

Solder the double leads, white in this instance, to the **G** pads of the **Out** connections on the board, see below.

Solder the single leads (black) to the **+** pads, see below.

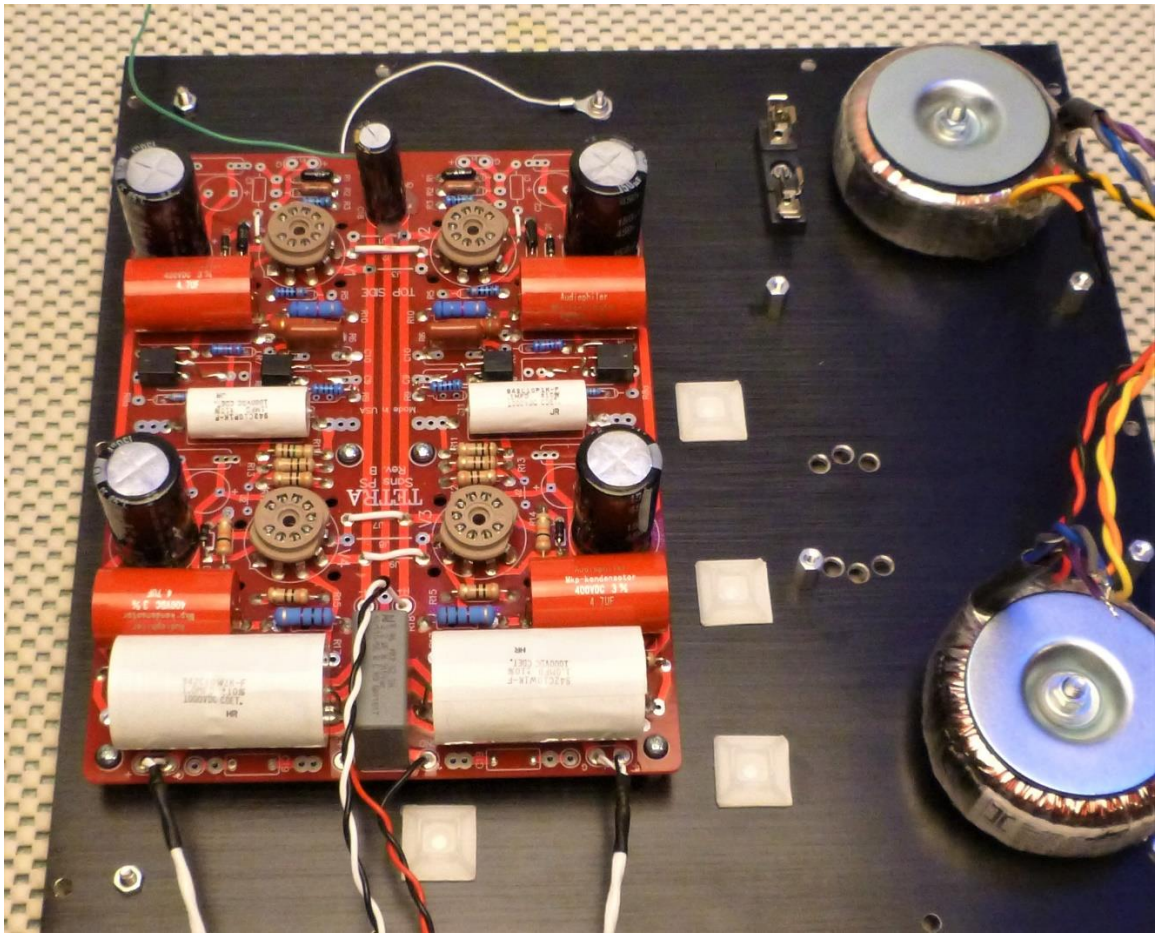


Cut a 6” (150mm) piece of wire, strip one end, and solder to the **GND** pad at the input end of the board.



Assemble seven O-Rings to seven screws included with the amplifier kit.

Position the amplifier board on the bottom panel aligned with its standoffs. Put a drop of nail polish on the threads each screw. Start them through the board into the standoffs.

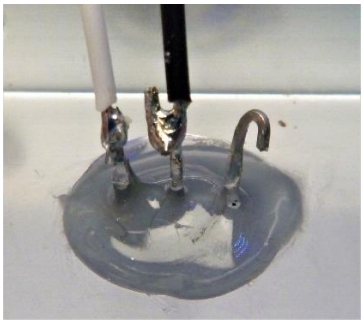


Tighten each screw until the O-Ring slightly compresses. If tightened too much the O-Rings will expand and pop over the heads of the screws.

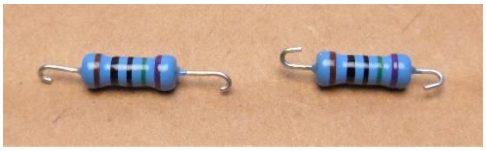
Set the bottom plate aside.

Prep the LED in the front panel as follows:

- Decide what colour of power indication you want, red or green.
- For green cut the shortest lead about 3/8” (10mm) long as shown below.
- If red is desired use the lead that has/had the intermediate length.
- Form a loop and connect to a 3” (75mm) long piece of wire and solder.
- Cut the centre lead about 3/8” (10mm) long as shown below.
- Form a loop and connect to a 3” (75mm) long piece of wire of a colour different than used above and solder.
- Trim the remaining lead and form a loop.
- Cover all three leads with heat shrink tubing.

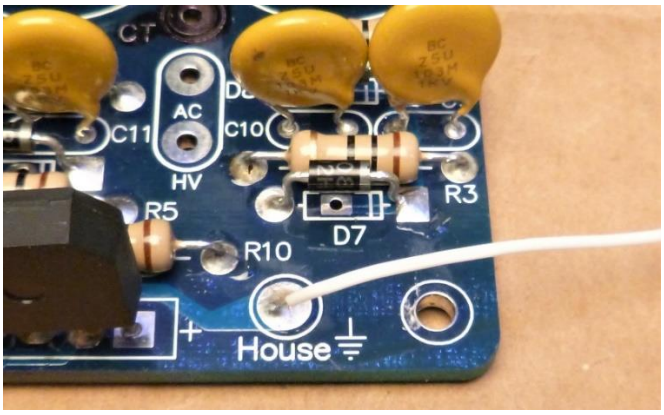


- Prep two 750 ohm resistors as shown below



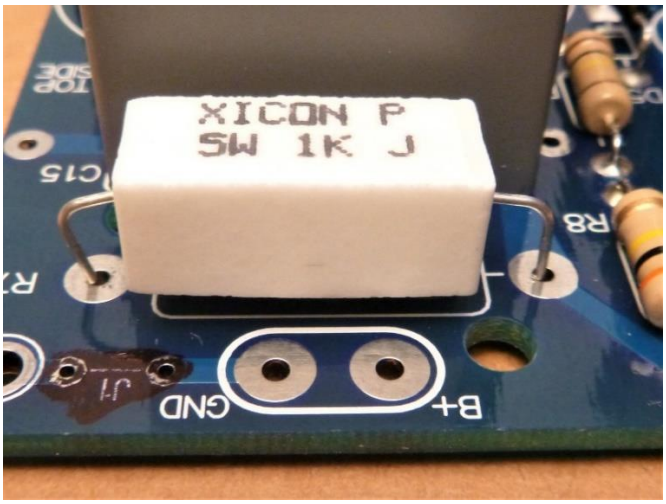
- Strip the ends of the leads attached to the LED
- Strip the ends of two more pieces of wire about 8” (200mm) long
- Connect and solder the leads from the LED to the resistors
- Solder the 8” leads to the other ends of the resistors
- Cover the resistors with heat shrink tubing, see below

Cut a piece of wire about 24” (60cm) long, strip one end and solder to the **House** ground on the power supply board.



Three R7 resistors are supplied with the power supply kit. Select the 1000 (1K) ohm resistor if you are building the standard version. Select the 300 ohm resistor if you are building the alternate (all 12AT7) version.

Assemble to the board with about 3 to 4 mm clearance to aid air flow. Solder and trim the leads.



Assemble four O-Rings to four screws included with the power supply kit.

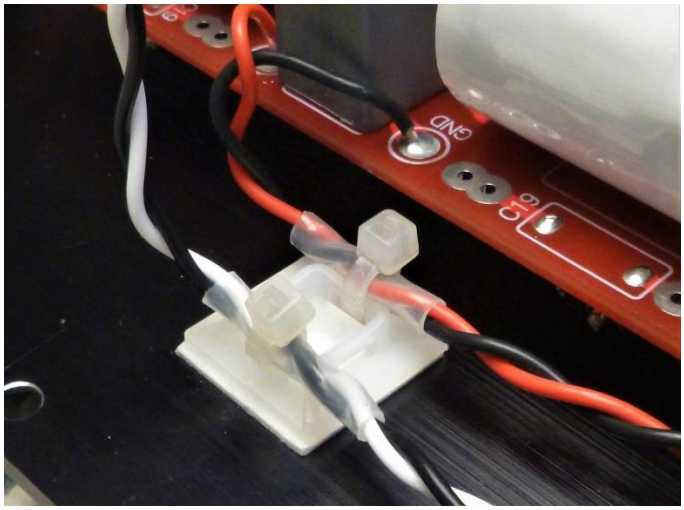
Position the power supply board on the bottom panel, with the heatsink closest to the amp board, aligned with its standoffs. Put a drop of nail polish on the threads each screw. Start them through the board into the standoffs.

Tighten each screw until the O-Ring slightly compresses. If tightened too much the O-Rings will expand and pop over the heads of the screws.

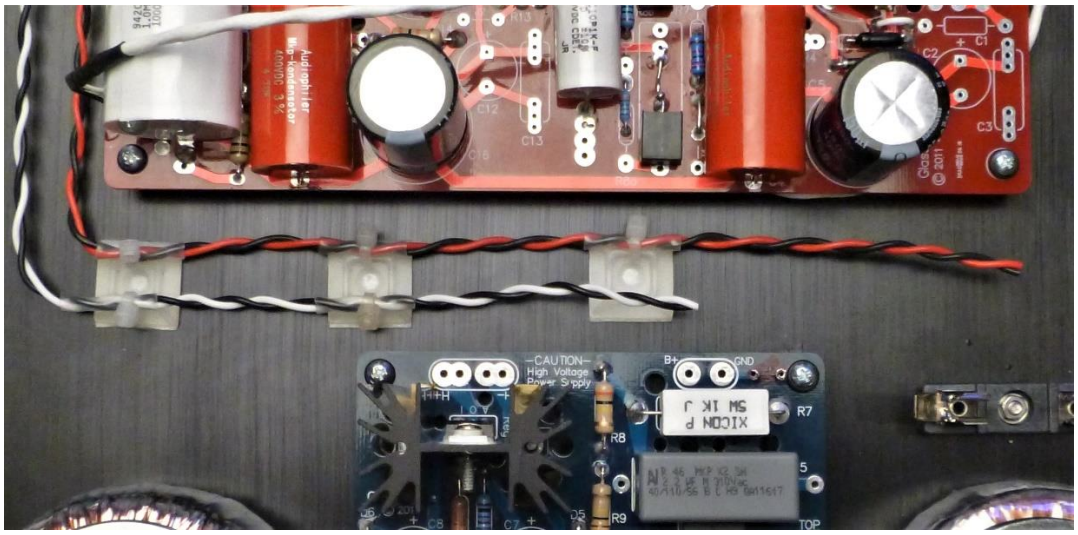
Cut seven pieces of heat shrink about 5/8” (16mm) long. Slide four over the twisted pair of wires running from the **B+** and **GND** on the amplifier board. Slide three over the twisted pair of wires running from the **H+** and **H-** on the amplifier board. These will be positioned where the wires will be strapped to the cable tie mounts.

Route the wires as shown below.

Slide the heat shrink tubing into position on the wires and heat. Strap to the cable tie mounts with zip ties as shown below.



Form the wires over the other three cable tie mounts, shrink the tubing into position and strap with zip ties as shown below. Cut the wires to the length shown.

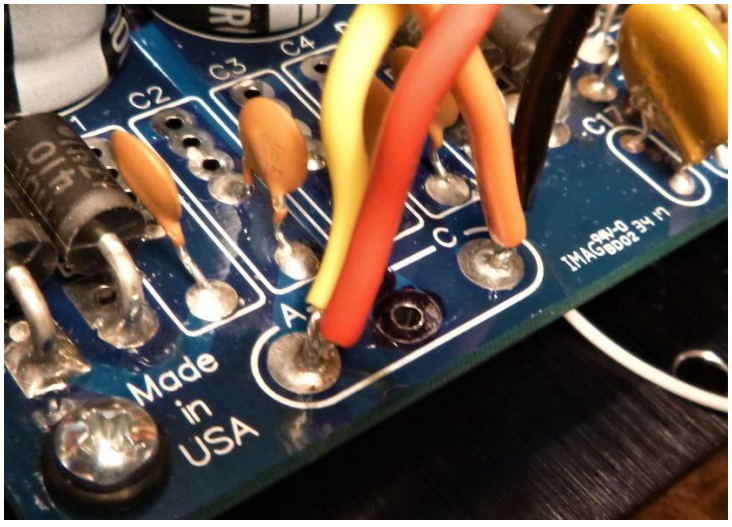


Strip the wires from the **H+** and **H-** on the amp board, black and white in this instance. Connect to the **H+** and **H-** on the power supply board. **Before soldering ensure that the H+ on the amp goes to the H+ on the power supply and the H- on the amp goes to the H- on the power supply.**

Leave the leads going to the B+ and GND disconnected for now.

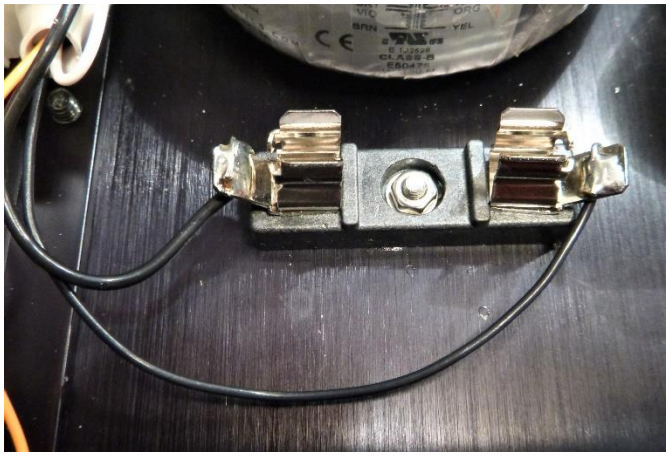
Connect the black and yellow leads on the B+ transformer to the **AC HV** pads on the power supply board and solder. See below. The spacing is tight so try not to melt any board components or other wires when soldering.

Insert the red-yellow pair from the filament transformer into pad **A** and the black-orange pair into pad **C** on the power board and solder.



Attach the rear panel to the bottom panel with two screws.

If the internal fuse holder is used, cut the leads from the AC inlet and power switch cable to length, strip and solder to the fuse holder. See below.



Route the wire from the **House ground** on the power supply board along the right side of the bottom plate and across the back. Cut to length and attach to the copper grounding bar.

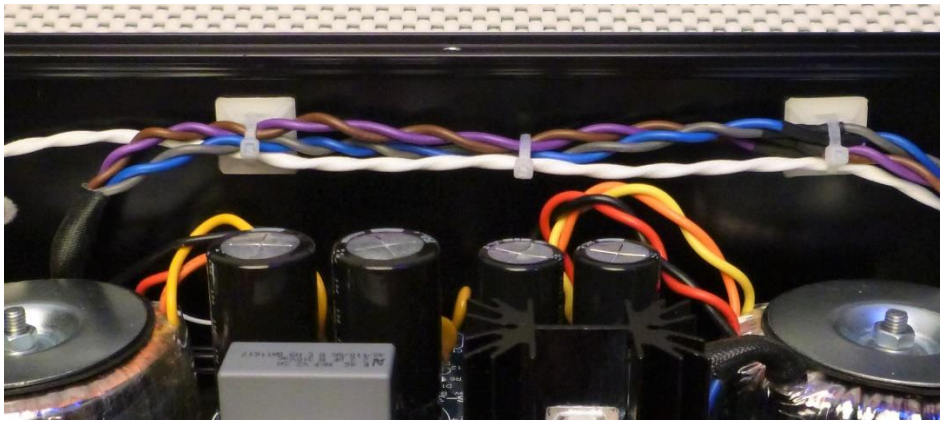
Attach the grounding wire from the chassis bottom to the grounding bar.

Solder both.

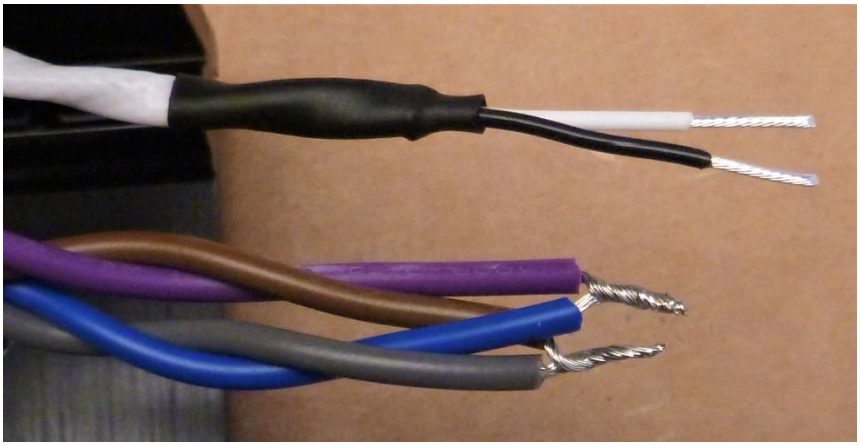
Assemble the right-side panel to the bottom panel and secure with three screws.

Route the grounding wire from the right-side panel along the back lower edge cut to length, strip and solder to the copper grounding bar.

Route the cable to the power switch and the wires from the B+ transformer along the right-side panel and secure with cable ties as shown below.

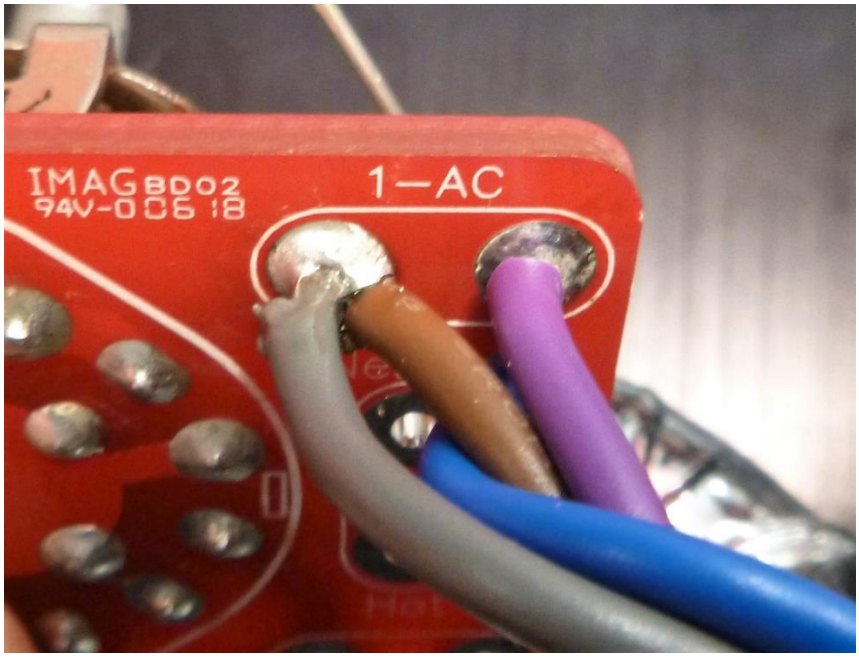


Trim the cable from the AC inlet to about the same length as the B+ transformer leads. Remove 1" (25mm) of sheath and shield (if you are using shielded cable) and put a piece of heat shrink on the end as shown below. Strip about 3/16" (5mm) of insulation from the wires.



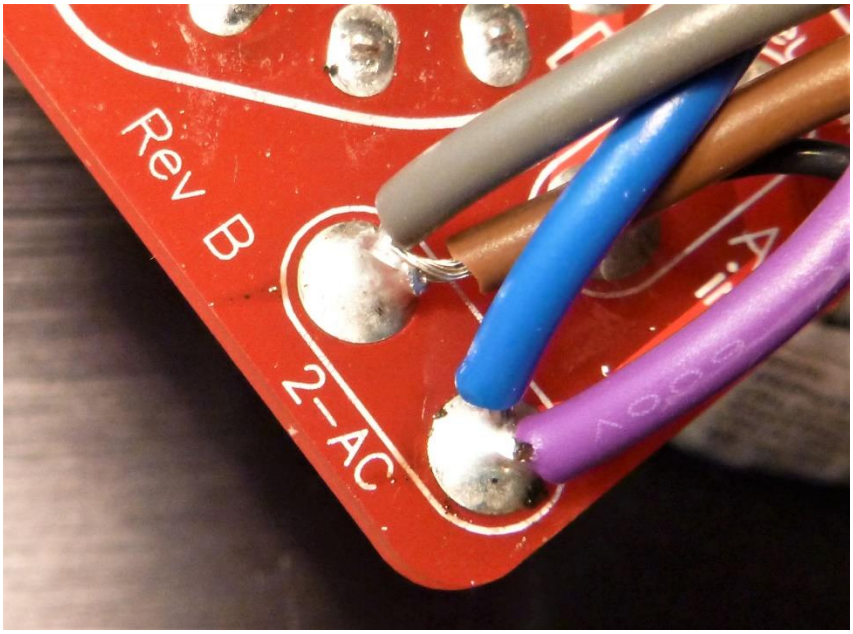
It's easier to connect the wires to the power switch before it's assembled to the front panel.

Position the switch as shown below, connect and solder the leads from the **filament transformer** (the nearest one to the switch) to the **1-AC** pads on the switch board as shown below.

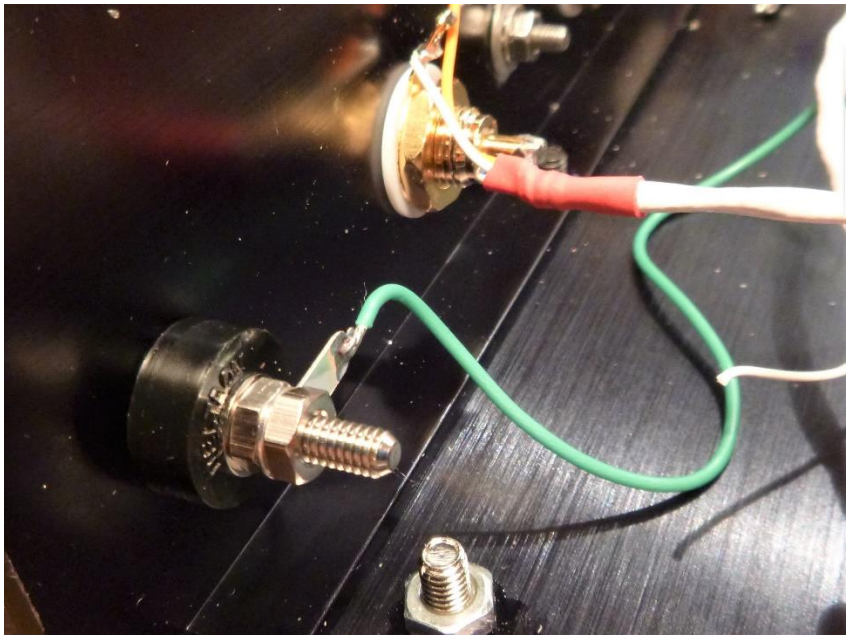


Connect the power lead from the **neutral** on the AC inlet, white in this instance, to the **Neutral** pad on the switch board. Connect the other lead to the **Hot** pad on the switch board and solder both.

Connect and solder the leads from the B+ transformer to the **2-AC** pads on the switch board as shown below.



Strip a bit of insulation off of the free end of the ground wire connected the **GND** pad at the back of the circuit board. Solder to the lug that came with the binding post. Assemble to the binding post and secure with the nut. Lock the nut in in place with nail polish on the nut and thread. See below.

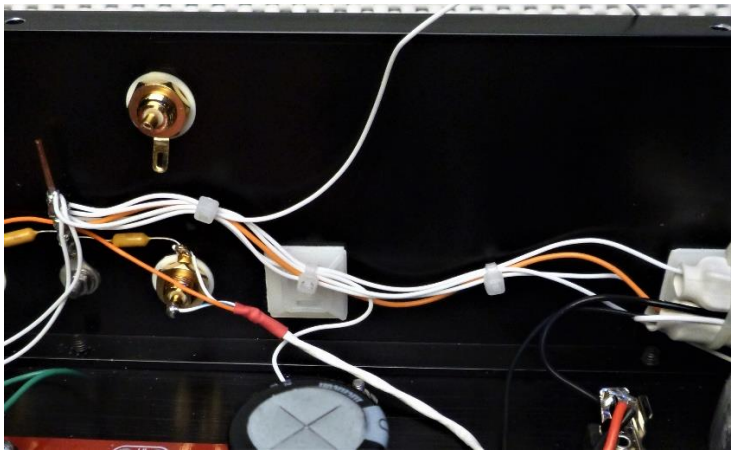


Assemble the left side to the bottom and secure with three screws.

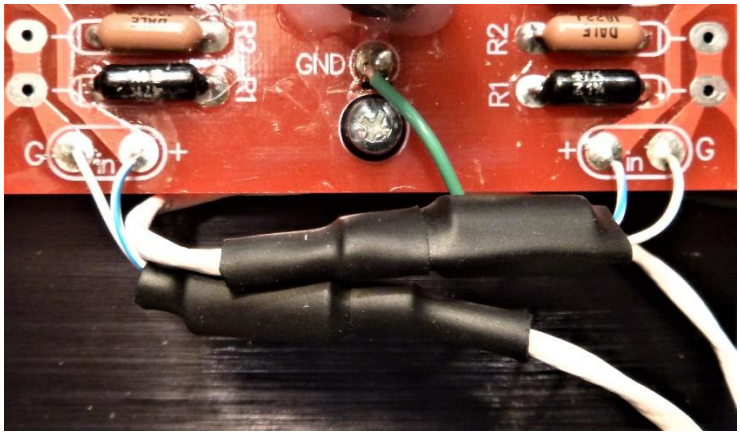
Temporarily anchor the front panel grounding lug and wire (the one made earlier with the large lug). To the front panel as shown below.

Run the wire through the cable anchors, see below.

Strip the front grounding wire, the left-side grounding wire and the one made earlier for the top panel grounding. Connect to the copper grounding bar and solder. Secure with zip ties, see below.



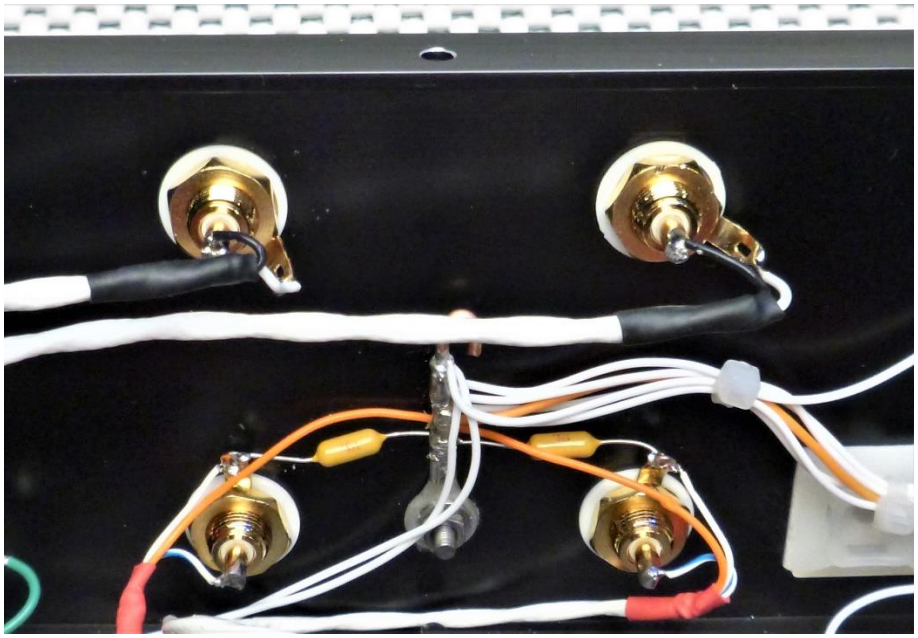
Strip the leads coming from the ferrite noise filters on the input cables. Connect the "hot" leads (the ones connected to the centre pins of the RCA jacks) to the **+** input pads. The other leads connect to the **G** (ground) pads. Solder the leads as shown below.



Secure the leads from the board to the output jacks to the right-side cable tie mounts as shown below.

Cut the cables so that when they are formed around the side and back of the chassis they go past their respective jacks by about 1” (25mm), see below.

Remove about 1” (25mm) of jacket and shield, or just strip the ends if you are using twisted pair wiring. Slide a short piece of heat shrink over the cable. Strip the ends and solder as shown below. Make sure you connect the lead on the **+** end back at the amp board to the centre pin of the RCA jack. See below.



Tighten the nuts securing the output jacks. Apply a drop of nail polish to the nut and thread of all four jacks.

Continue with part 4 for the final assembly and testing.