

Part 6, Attachment 1. Pentode & Triode Connection Options

Wall of Sound.ca Tubelab DIY EL84 Amp

Tools Required:

- Screw drivers
- Various pliers
- Soldering iron
- Wire Strippers
- Electrical Tape
- Heat shrink tubing

As configured in the assembly instructions the amp is running in ultralinear mode. This is sometimes referred to as distributed loading.

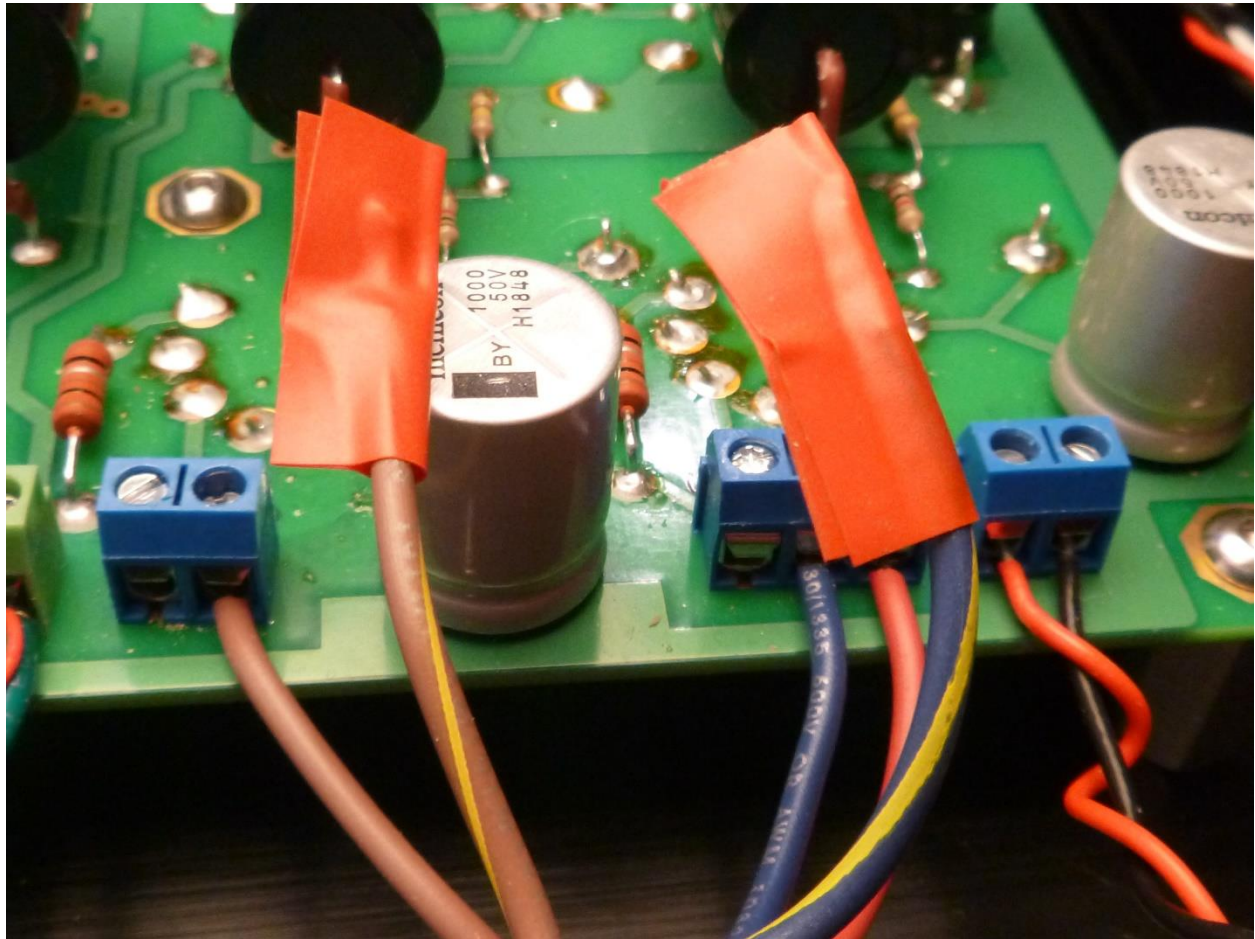
In effect the load is distributed by the output transformer to both the anode (plate) and the screen grid of the output tube(s). The nominal advantage of ultralinear is that it combines the higher power of pentode mode with the lower distortion of triode mode.

Nominally this amplifier, in ultralinear mode, will output approximately 15 watts per channel. Pentode might get us 2 or 3 watts more. Triode will likely only yield about 5 clean watts per channel. Triode amps, run within their limits, have a reputation for sounding "sweeter" and more "musical", however you wish to define that.

Why use triode? If you are driving very high efficiency speakers, something like a pair of Klipschorns, 5 clean triode watts might be more than sufficient. A small desktop system played at low volumes might be a good match for a triode amp.

I can't offer much of an opinion about pentode-connected amps except to say that the Finalé Audio F-7189 II runs in pentode and I quite liked its sound.

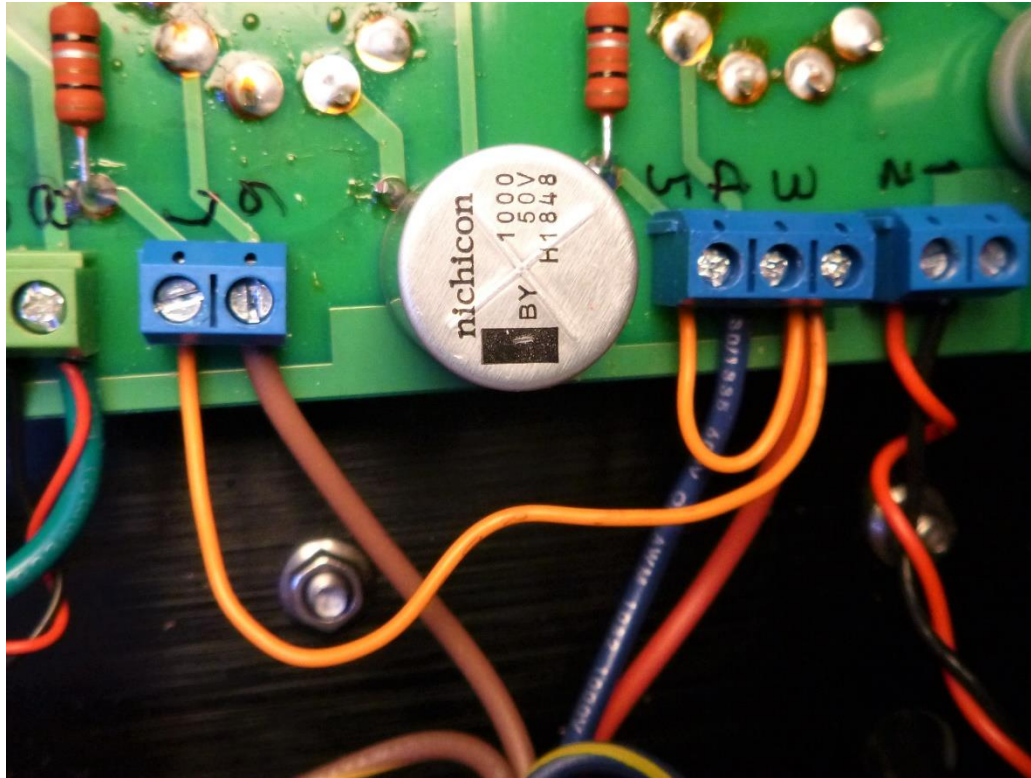
Below is the initial preparation for Pentode and Triode connection:



Loosen the connector block screws for the **brown-yellow** & **blue yellow** output transformer wires, **both channels**. Tape over the ends but give them a wide berth when the amp is running. There will still be about **300 Volts DC** on them! In fact, two layers of tape would be advisable.

Disclaimer: I haven't actually tried the SPP in either of these two modes. Pentode should be no problem but triode might be problematic. See the triode connection instructions below for more information.

Pentode Mode:



Cut four short pieces of wire, two approx. **50mm** long and two approx. **100mm** long.

Strip **6mm** from all ends and melt a little solder on the bare ends to keep the strands together.

Loosen the connector screw securing the **red** wire at terminal **3**.

Assemble the ends of a short and a long wire to terminal **3** as shown above and tighten the screw. Pull all three wires gently to ensure the clamp in the terminal has gripped all three wires.

Insert the other ends into terminals **5** and **7**, tighten the screws.

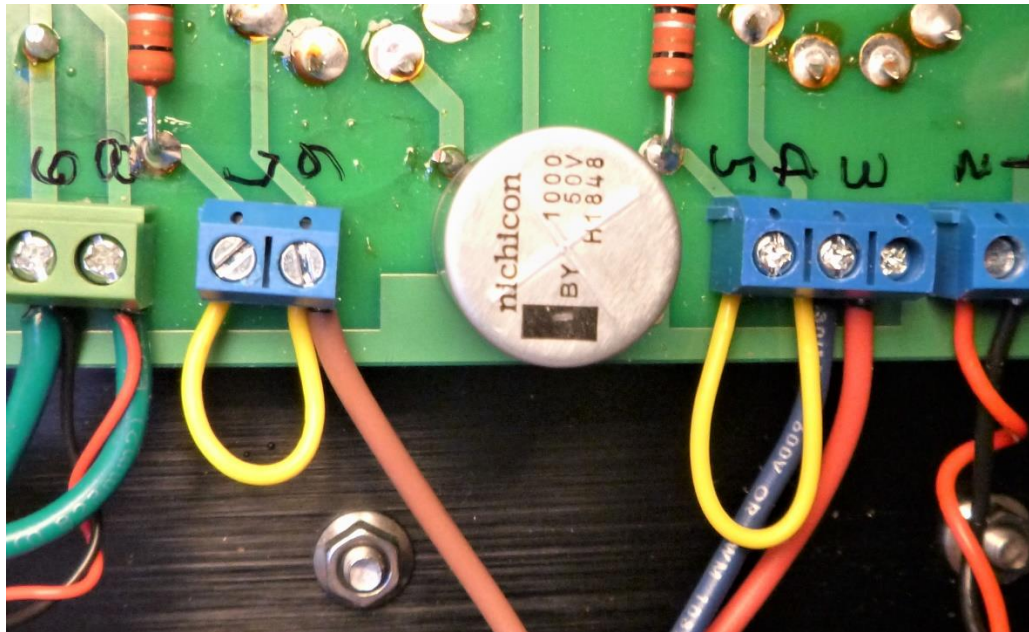
Make the same connections on the other channel's terminals, numbers **12, 14 & 16**.

Ensure that the insulated transformer leads are all out of harm's way. If after listening you find pentode or triode mode more to your liking, cover the **brown-yellow & blue yellow** leads with heat shrink tubing, fold them back and zip tie them to other wires.

You're good to go. If pentode isn't to your taste, the process is reversable.

Triode Mode:

Some pentode tubes, like the EL84, don't respond well to triode connection IF they are run close to their dissipation limits. If you haven't done the calculation for dissipated power refer to the last page of Part 5, Attachment 2 and run the calculation for your amp. If your amp is running its tubes at any more than **10** or **11** watts dissipation, you might not want to experiment with triode operation. Especially if you are using JJ tubes that have a 12 watt dissipation limit.



Cut four short pieces of wire approx. **50mm** long.

Strip **6mm** from all ends and melt a little solder on the bare ends to keep the strands together.

Loosen the connector screw securing the **blue** wire at terminal **4**.

Assemble the end of a wire to terminal **4** as shown above and tighten the screw. Pull both wires gently to ensure the clamp in the terminal has gripped both wires.

Insert the other end into terminal **5** and tighten the screw.

Loosen the connector screw securing the **brown** wire at terminal **6**.

Assemble the end of a wire to terminal **6** as shown above and tighten the screw. Pull both wires gently to ensure the clamp in the terminal has gripped both wires.

Insert the other end into terminal **7** and tighten the screw.

Loosen the connector screw securing the **blue** wire at terminal **13**.

Assemble the end of a wire to terminal **13** and tighten the screw. Pull both wires gently to ensure the clamp in the terminal has gripped both wires.

Insert the other end into terminal **14** and tighten the screw.

Loosen the connector screw securing the **brown** wire at terminal **15**.

Assemble the end of a wire to terminal **15** as shown above and tighten the screw. Pull both wires gently to ensure the clamp in the terminal has gripped both wires.

Insert the other end into terminals **16** and tighten the screw.

Ensure that the insulated transformer leads are all out of harm's way. If after listening you find pentode or triode mode more to your liking, cover the **brown-yellow & blue yellow** leads with heat shrink tubing, fold them back and zip tie them to other wires.

Watch the EL84s closely when you power up the amp. If the plates turn red or anything out of the ordinary happens switch the amp off immediately.

If triode isn't to your taste, the process is reversible.