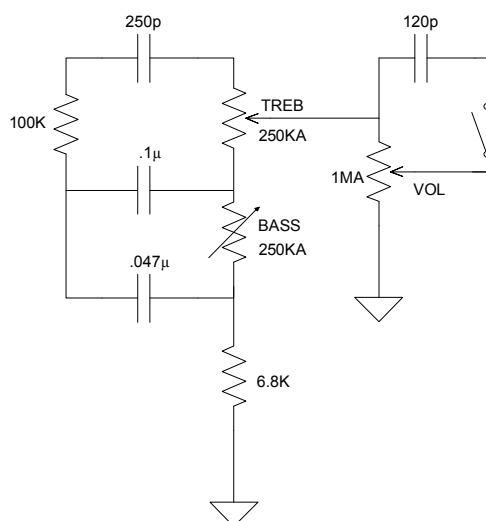


TONE STACK MOD KIT (K-702)

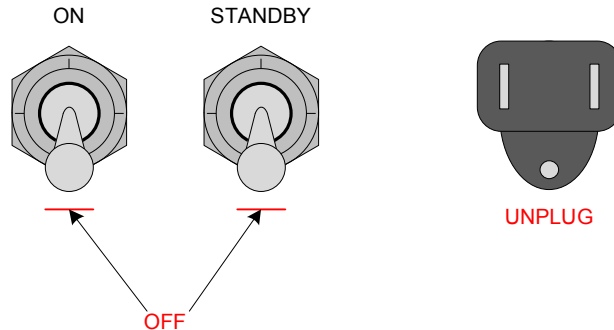


Use these instructions and your vintage Fender guitar amplifier to learn:

- How to locate the tone stack components.
- How to change them for a spiced up dirty tone.

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Safety

*“Caution: to prevent electrical shock,
do not remove chassis or metal cover attached to chassis.
No user serviceable parts inside.
Refer servicing to qualified personnel only.”*

-the back of an amp

We have quoted the back of an amp to stress the importance of putting safety first when working on this type of equipment. Tube amps operate at high voltages which have the potential to kill. Only work on an amp when you are wide awake and sober.

Please make sure you do the following before opening your amp:

- Turn the power switch off.
- Turn the standby switch off (down position).
- Unplug the power cord.
- Give the power tubes 10 minutes to cool down.

When the amp is open:

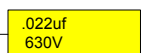
- Use a volt meter with alligator clips to measure for high voltage at several test points. (see the “Preliminaries” section for details)
- Use the one-hand rule. (see the “Preliminaries” section for details)

Parts List

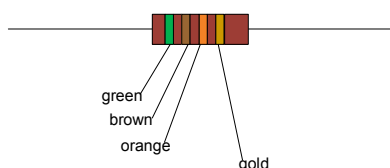
<u>Part Number</u>	<u>Quantity</u>	<u>Description</u>
C-SM500	1	500pF capacitor



C-MD022-630	2	.022 μ F capacitor
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R-I51K	1	51 k Ω , 1/2W resistor
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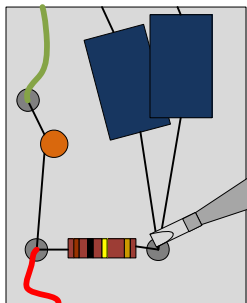
Tools

1. **Digital Multi-Meter (DMM)** – a meter for measuring voltage, current, resistance, and sometimes capacitance.
2. **Alligator Clip Test Leads** – connect to your DMM for hands free measurements. These are useful when setting the power tube bias and for safety when taking electrical measurements.
3. **Soldering Station** – soldering iron with a 1/8” screwdriver tip and a variable control capable of producing 25-40Watts. This will allow you to do some precise soldering of circuit components and wires (do not use a soldering gun for soldering of electronic circuits).
4. **Solder** – 60/40 rosin core solder.
5. **De-soldering Pump or Bulb** – this will assist you in removing solder for circuit modifications and correcting connection errors.
6. **Wire Strippers**
7. **Cutting Pliers** – These are great for cutting leads on resistors, capacitors, etc. before and after soldering.
8. **Needle Nose Pliers** – 6” long are good for bending component leads and holding components leads while de-soldering.
9. **Screwdrivers** – Phillips

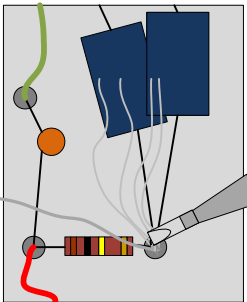
Soldering Tips

- Work in a ventilated area with a fan to blow the smoke away from your face.
- Allow the soldering iron to heat up to the point where the solder melts quickly when touched to the iron's tip.
- Clean the soldering iron's tip by wiping it across a wet sponge before applying solder to it.
- Be very careful not to unintentionally burn any wires in the vicinity of the soldering iron.

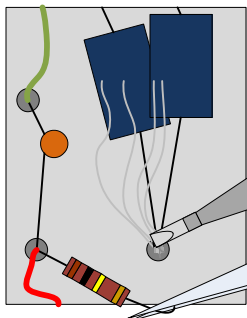
De-soldering Tip



1. Heat up the connection point until it starts smoking and becomes a liquid.

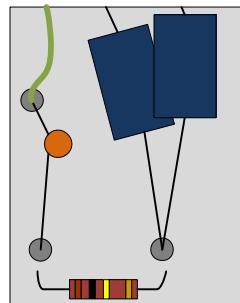


2. If necessary, add new solder to the connection point to help it become a liquid.

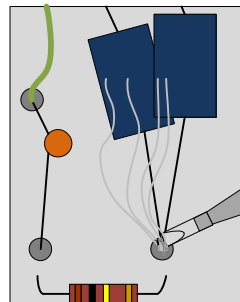


3. Remove the component lead from the connection point with needle nose pliers.

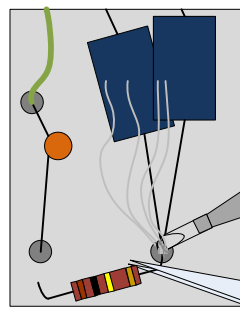
Soldering Tip



1. Cut and bend the component leads for a neat fit to their connection points.



2. Heat up the connection point until it becomes a liquid.

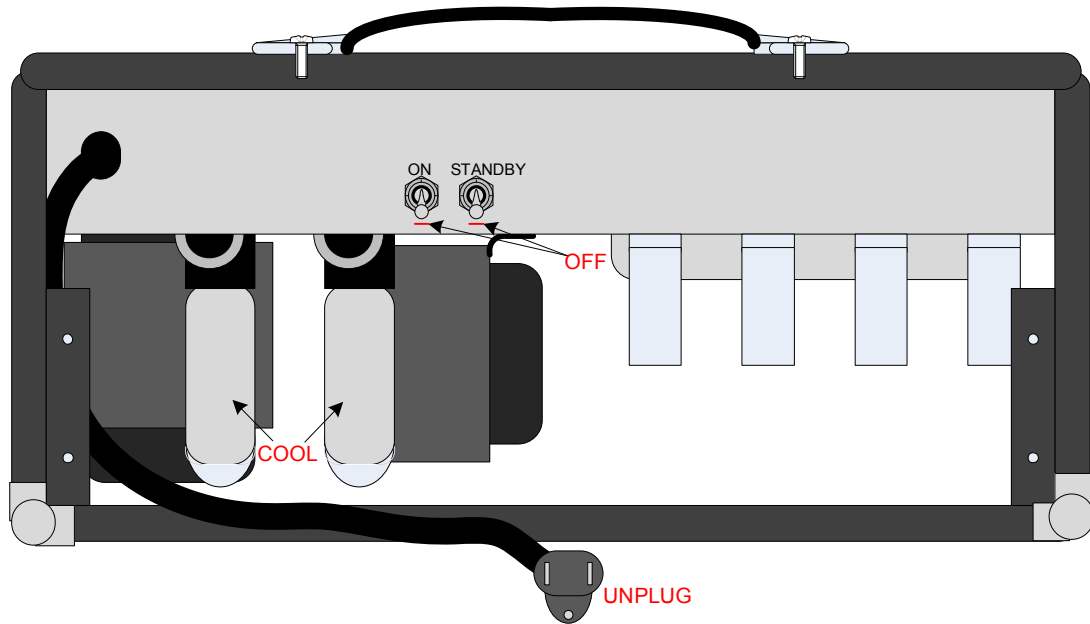


2. Insert the appropriate component lead with needle nose pliers.

Preliminaries

Please make sure you do the following before opening your amp:

- Unplug the power cord.
- Turn the power switch off.
- Turn the standby switch off (down position).
- Give the power tubes 10 minutes to cool down.

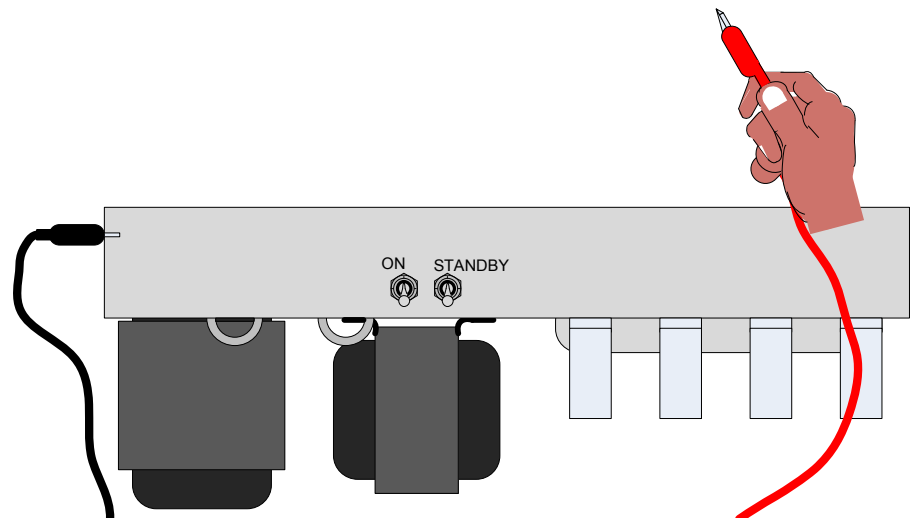


- Make sure the power tubes have cooled down enough to touch.
- Remove the power tubes from the amp and store them someplace safe.
- Remove the amplifier chassis from its cabinet and set it on a safe workplace.

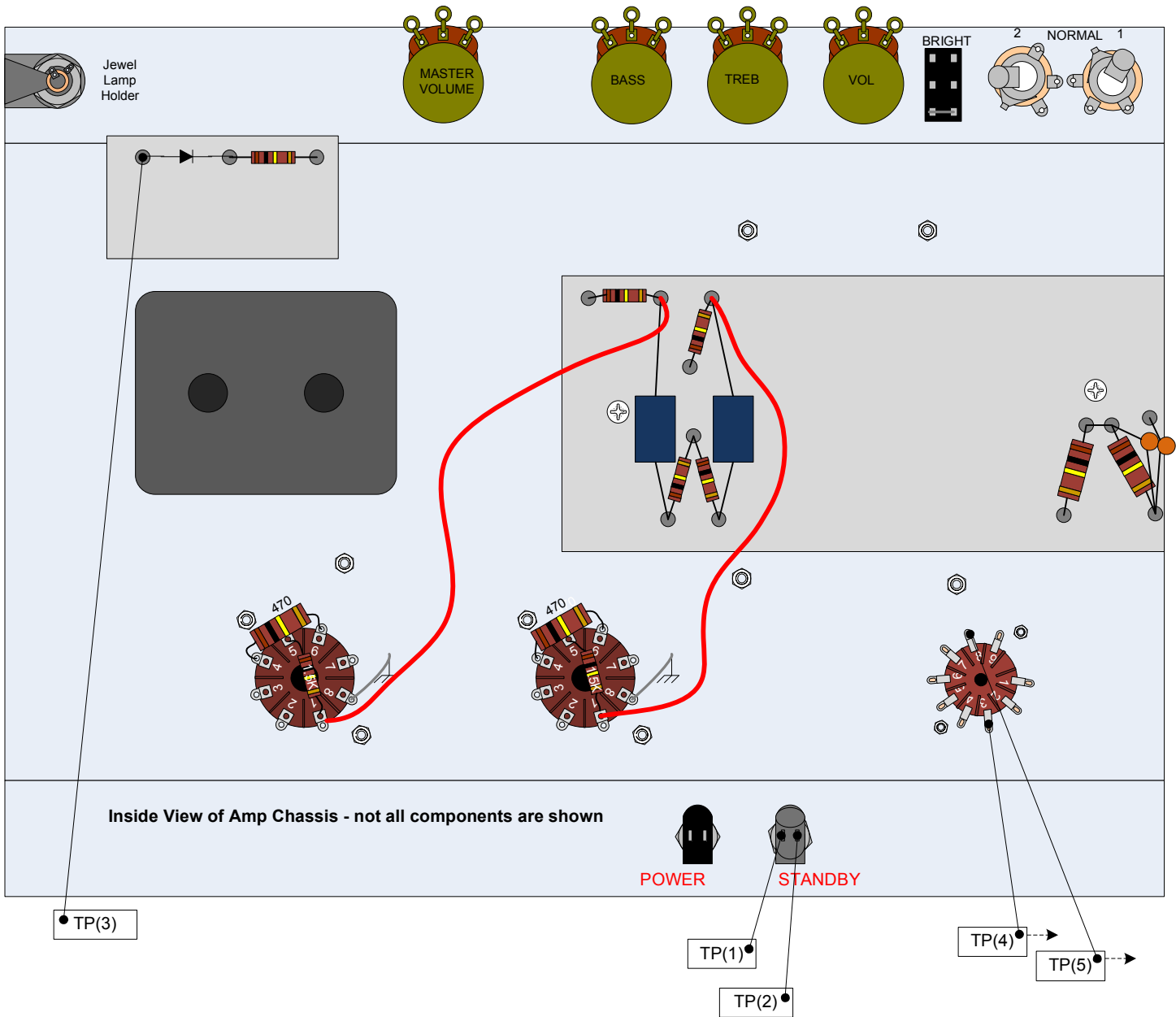
When the amp is open:

- Follow the one hand rule and use a volt meter with alligator clips to measure for high voltage at several test points.

(test points are on the next page)



The one hand rule (pictured above): is a safety precaution for working on an amp that is plugged in or could potentially have high voltages present. Using alligator clips with your DMM, clip the ground side to the chassis and use the other side to probe at various test points with one hand. *This prevents a fatal shock which can result from current passing through the heart.* (Many people even put their other hand in their pocket or behind their back).



Test Points

If there is a high voltage present at any of these test points, there may be something wrong with your amp. Please have it checked by a qualified repair shop.

TP(1), TP(2): These test points are both on the standby switch. When the amp is in operation, these two points have a very high voltage present. By 10 minutes after turning off the standby and power switches, all the voltage should have been drained.

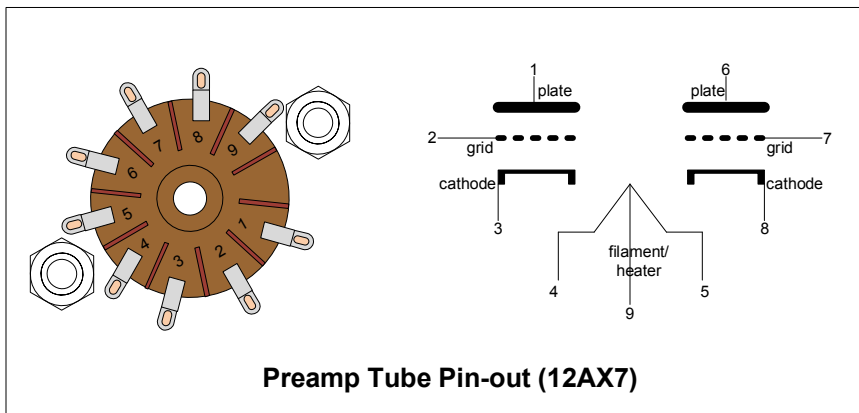
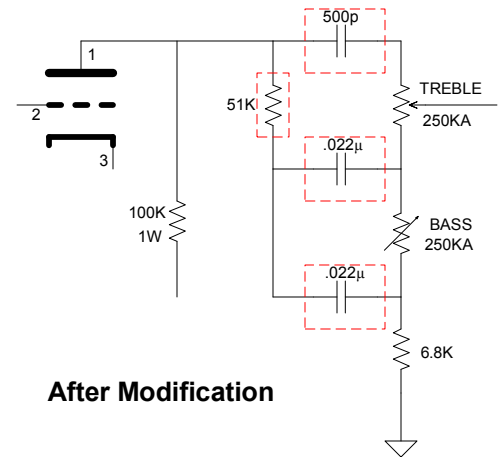
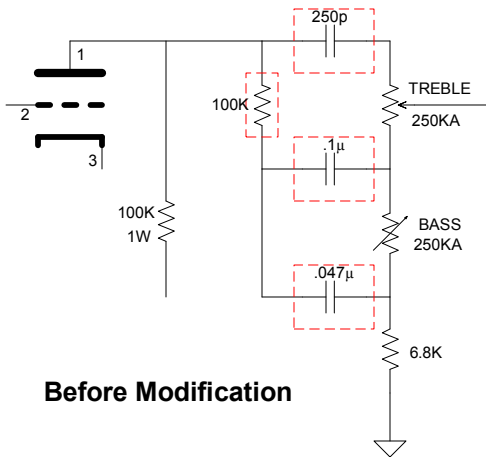
TP(3): This is the anode side of a solid state diode.

TP(4), TP(5): These test points are the cathode pins of the preamp tubes. It is not a bad idea to check these two pins on each one of the preamp tubes.

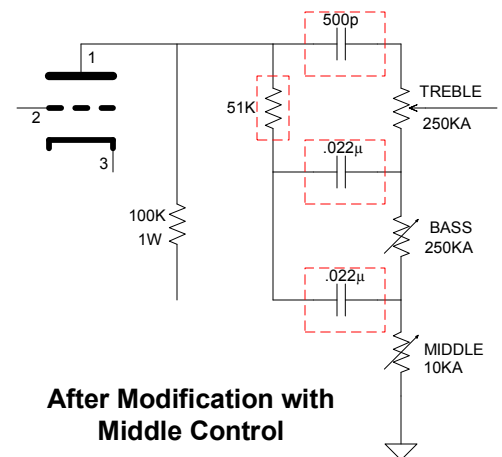
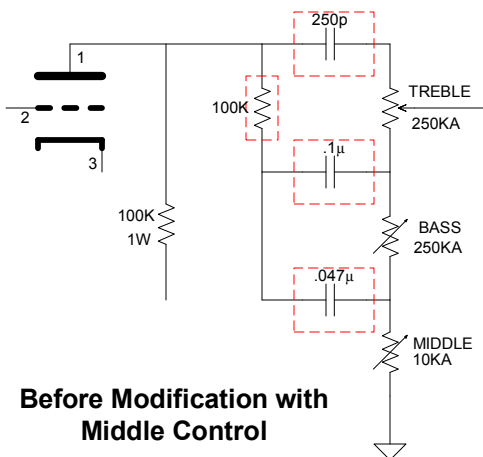
(Tube Rectifier TP: If your amp has a GZ34/5AR4 tube and no standby switch, then check the GZ34 pins 2 and 8 for voltage.)

Tone Stack Modification

Here is a schematic representation of this mod. It is not necessary to be able to read the schematic in order to complete the mod.

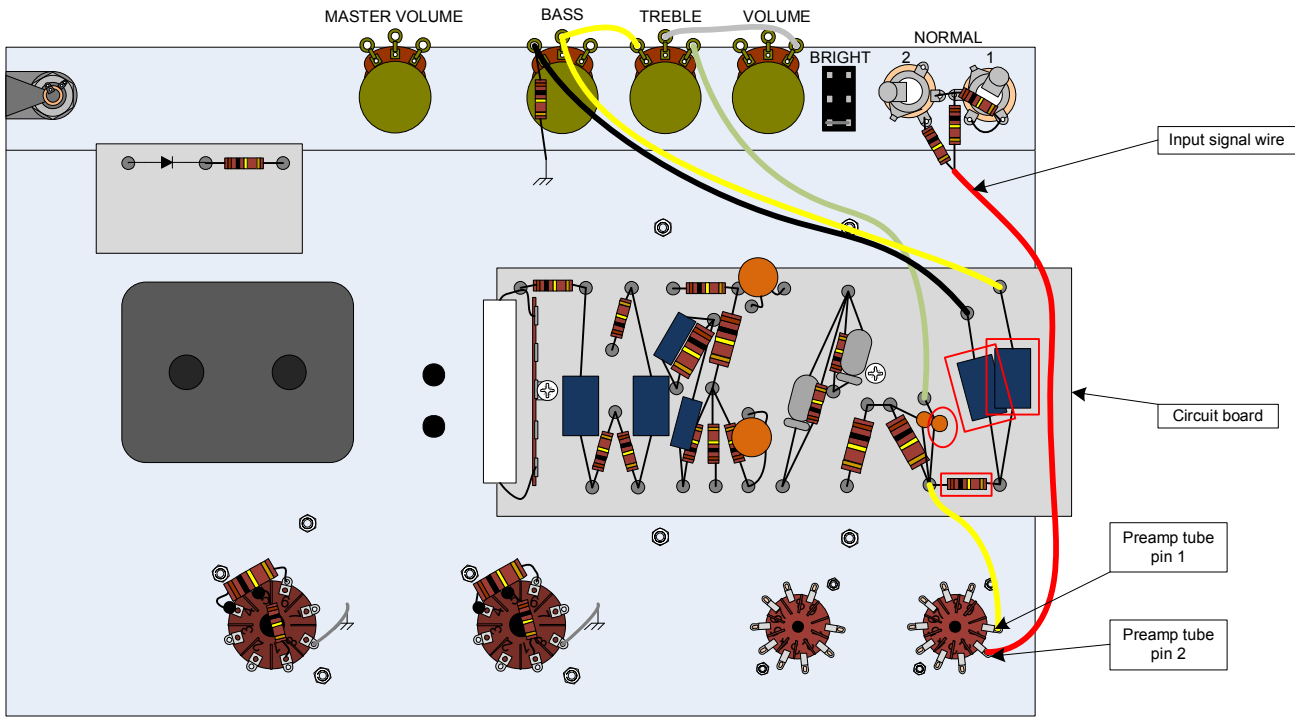


The modification is the same for amps with a middle tone control.

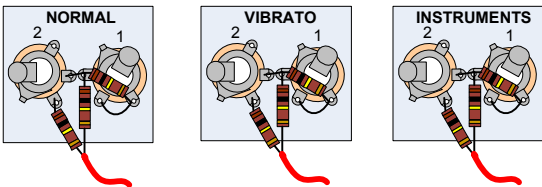


Tone Stack Component Location

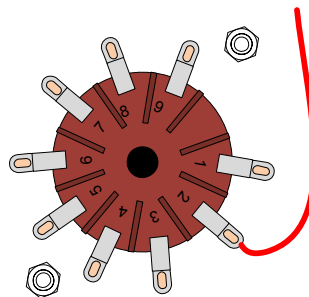
Depending on your amp model and which channel you want to modify, the inside of your amp chassis will look slightly different than this example. Follow these steps to find the tone stack components you want to modify.



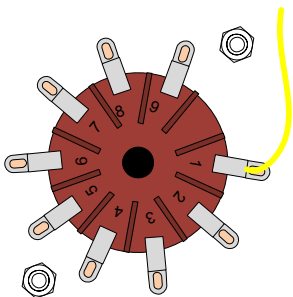
Inside View of Amp Chassis – not all components and wires are shown



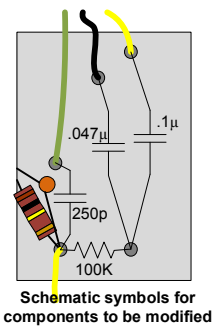
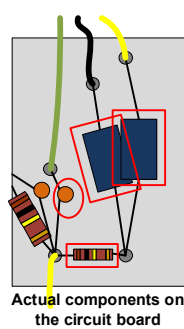
Step 1: Choose which channel you would like to modify and find the input jacks related to that channel. (They should be labeled as above).



Step 2: Follow that channel's input signal wire to its preamp tube pin 2.

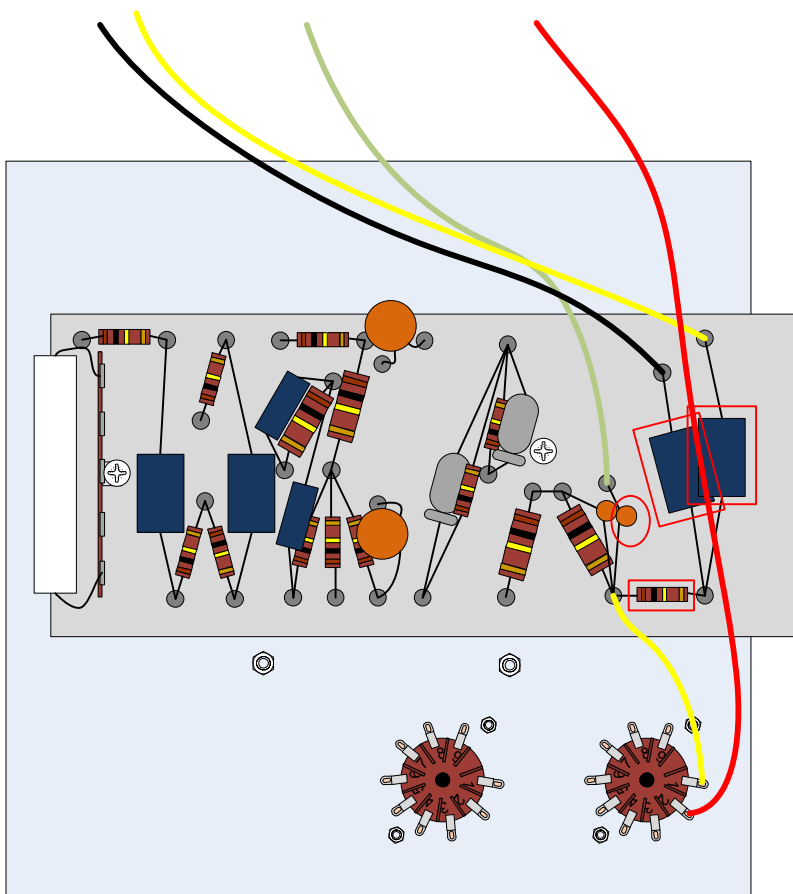


Step 3: On that same tube socket, find pin 1 and follow its wire to the circuit board.

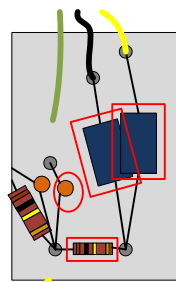


Step 4: On the circuit board, identify the three capacitors and one resistor to be modified.

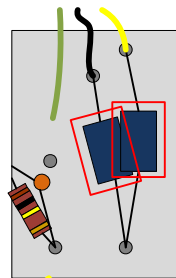
Tone Stack Component Modification



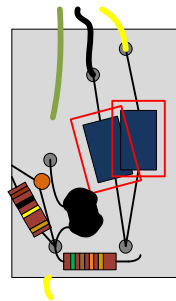
Inside View of Amp Chassis – not all components and wires are shown



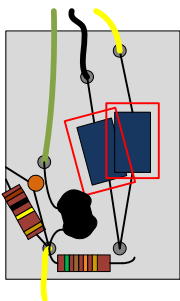
Step 1: De-solder the wire connections to the 250pF cap and the 100kΩ resistor.



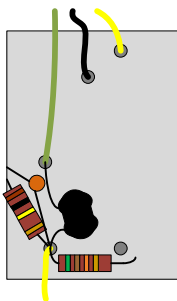
Step 2: Remove the 250pF cap and the 100kΩ resistor.



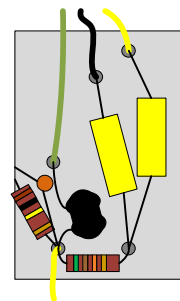
Step 3: Insert and solder the 500pF cap and one lead of the 51kΩ resistor.



Step 4: Re-connect the wires to the 500pF cap and the 51kΩ resistor.



Step 5: Remove the two remaining capacitors.



Step 6: Insert and solder the two .022µF caps and the other lead of the 51kΩ resistor.

Step 7: Close the amp back up, re-insert the tubes and you're done.