

WARNING: Performing these modifications WILL void the warranty on your amplifier. Working on amps can be deadly if you do not take proper precautions. Follow these instructions very carefully. If you are at all unsure of your ability to perform these modifications STOP and take your amp to a professional to be modified. You can also send your amp to me for modification.

No Warranty: This kit and the instructions included do not include any warranty of any kind. The modifications to your amplifier are at your own risk and you agree to completely hold harmless the seller of this kit against any and all claims. Tube amplifiers contain parts that operate at very high temperatures and deadly voltages. If you are not sure of your abilities to perform these modifications then do not perform them.

Thanks for purchasing the Hot Rod Deluxe Modification Kit. After these simple changes you amp should sound far better than it does now.

Required Tools/Supplies:

- Temperature Controlled Soldering Iron and Solder
- Solder Sucker and or de-soldering braid
- Multi-Meter Capable of reading 500V DC
- Phillips Screwdriver
- Pliers with insulated handle
- Wire Cutters
- Safety Goggles
- Alligator Leads

Optional Tools/Supplies:

- Silicone glue.
- 9/16" nut driver or socket wrench.
- 1/2" nut driver or socket wrench.
- Fine point Sharpie or similar permanent marker.
- Masking Tape

Skills required:

- Basic soldering skills .
- Basic knowledge of electronics.
- The Ability to follow instructions.

INCLUDED IN THIS KIT ARE ALL THE FOLLOWING PARTS:

Resistor Guide		
BLACK	0	K
BROWN	1	N
RED	2	R
ORANGE	3	O
YELLOW	4	Y
GREEN	5	G
BLUE	6	B
VIOLET	7	V
GREY	8	E
WHITE	9	W

TYPE	VAL	QTY	Code
WIMA 10mm Cap	0.015 μ f	1	153
WIMA 15mm Cap	0.1 μ f	1	104
WIMA 10mm Cap	.022	1	223
MLCC Cap	270 pf	1	270
Mica Cap	100 pf	2	100
1/2 Watt Resistor	82k	1	ERKR
1/2 Watt Resistor	100k	5	NKKO
1/4 Watt Resistor	220k	1	RRKO
Power Resistor	470	2	YVN
1/4 Watt Resistor	100k	1	NKKO
Filter Cap	100u/450v	1	100U

TYPE	VAL	QTY	Code
Input Jack	Switchcraft	2	JACK
POT	100K Audio	1	100KA
Wire	8inch	2	

If you ordered the Supreme kit your kit will also have the following:

VALUE	TYPE	QTY
1/50	AXIAL Yellow	1
22/25	AXIAL	3
22/500	AXIAL	3

NOTE: Capacitor voltage values may vary some from that specified.



Instructions: Follow these instructions to the letter.

Prep the Amp. It's a good idea to have all the parts and tools you will need laid out before starting in a well lit area.

Unplug the Amp and put on your safety goggles.

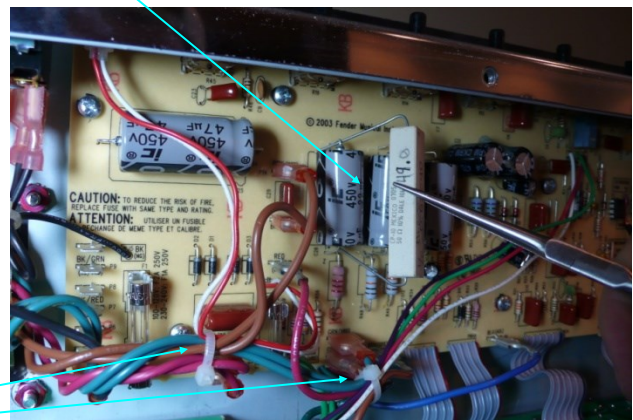
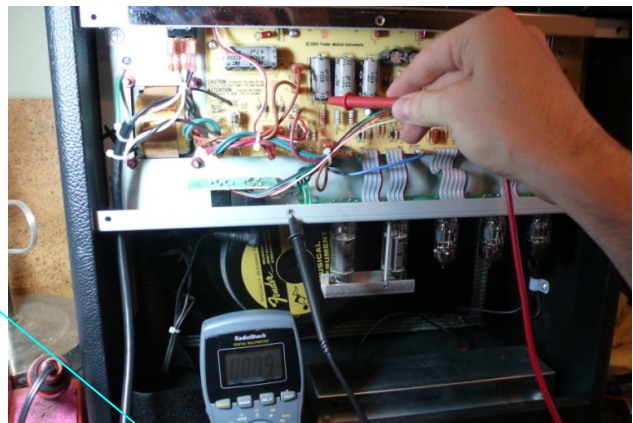
1. Remove the chicken head control knobs by loosening the set screws. Remove the nuts and washers holding the potentiometers and jacks on the top panel.



2. Remove the screws holding on the back panel and remove the panel. If the back panel does not come off easily you can loosen the chassis screws on the side of the amp about a half turn each.

3. Drain the Filter Caps: The filter caps on your amp may be drained already but you must follow these steps to insure that any deadly voltage is removed from the amp before you begin work. Test the voltage across the filter caps. Set your multi meter to DC and measure the voltage across the positive and negative side of any of the filter caps. If the voltage reads higher than 10 volts, then you need to drain the caps.

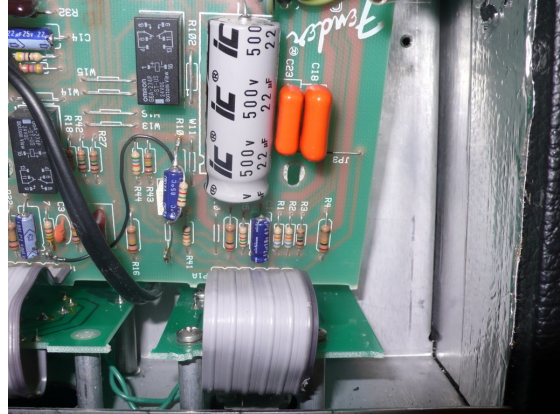
4. Using the insulated pliers to hold one of the included 470ohm power resistors touch one lead of the resistor to the negative side of the filter cap and the other to the positive side, leave the leads in contact with the power resistor for 30 seconds and measure again. Keep repeating this step until the voltage reads below 10V. Capacitors can recharge even when the amp is not plugged in!!! After the filter caps are drained take an alligator lead and clip one end to the positive lead of the filter cap and the other end to the chassis and leave it there until you are done with your work. This will prevent the filter caps from re-charging.



5. Clip all of the wire ties.

6. Remove all the nuts from the pots.

7. Remove the smaller PCB which supports the tube sockets. The easiest way to do this is by removing the tubes, then removing the black screws which hold the sockets to the chassis, also remove the really small PCB which supports V1.



8. Unplug all the power and output transformer leads by pulling firmly with steady pressure gently rocking the lead terminal from side to side. As you remove each lead mark the wire with masking tape and a Sharpie so you will know where to plug it back in when you are putting the amp back together. I just mark the terminal number on the lead.



9. Remove all circuit board standoff screws.

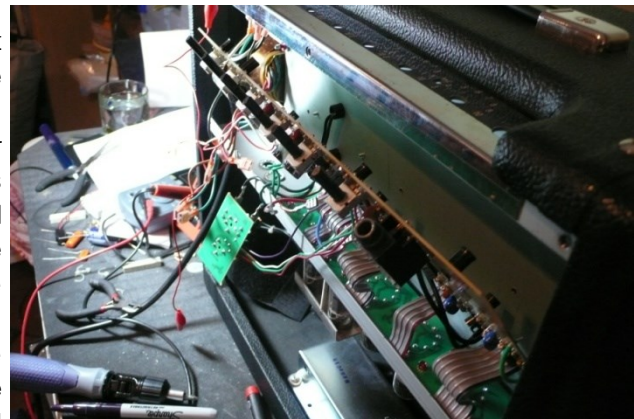
Expose the circuit board:

1. Pull gently on the board to make sure that it is not stuck to any of the standoffs that were holding the circuit board screws.

2. Press the wires from the output transformer and reverb as far away from the board and as close to the chassis as possible. The board needs to come down toward the bottom of the amp before the pots will clear the top of the chassis as shown.

3. Using gentle pressure on the top of the circuit board press the board down making sure it is not getting hung up on any wires until all the pots have cleared the top of the chassis then pull the board to you to expose the underside.

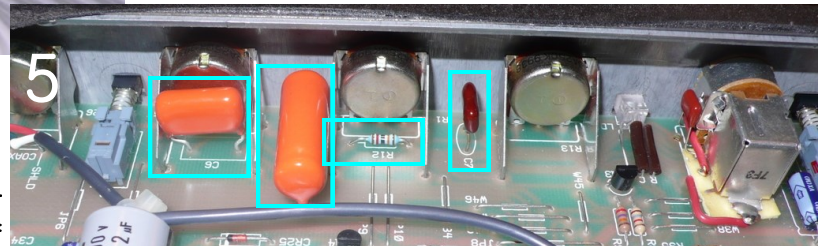
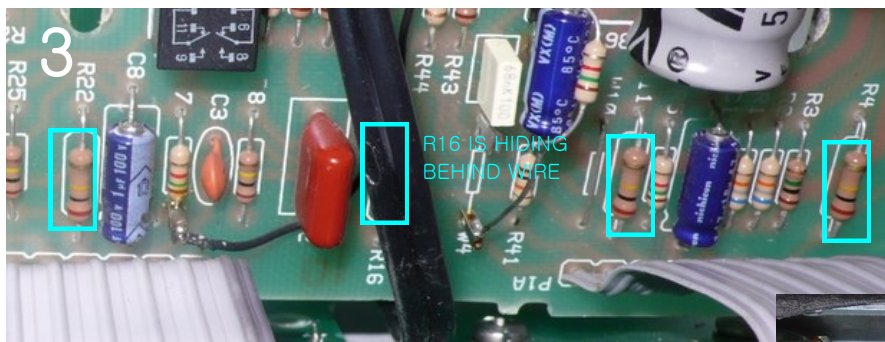
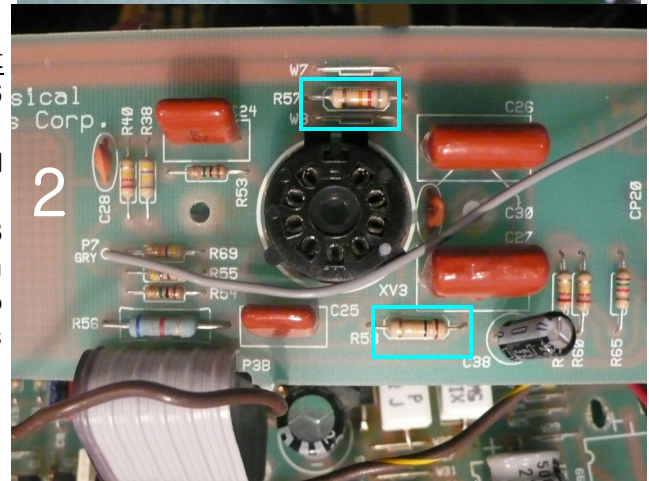
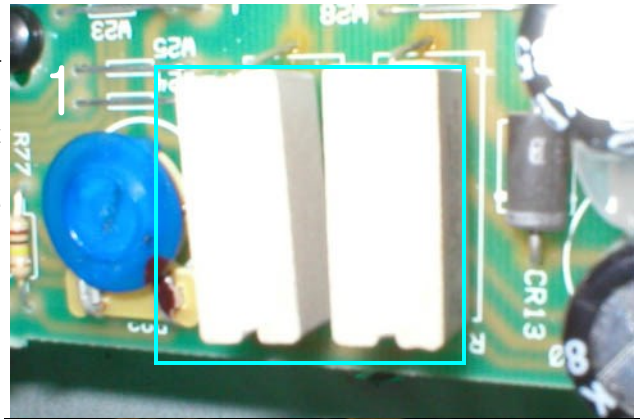
DO NOT PUT PRESSURE ON ANY COMPONENTS INCLUDING THE FILTER CAPS WHEN MOVING THE BOARD.



Removing the Old Components.

Be careful that your soldering iron is not too hot. The solder pads on the PCB are prone to curling and separating from the PCB, so remove the components with care, never using force. It is best to clip the component leads on the front of the PCB then remove the remainder of the lead and solder from the back side carefully with a solder sucker and de-soldering braid.

1. Remove the Power Resistors R78 and R79.
2. Remove R57 and R58 on the Tube PCB.
3. Remove R4, R11, R16 and R22 on the main PCB
4. Remove C31 on the main PCB, it's the biggest capacitor.
5. Remove the Master Volume POT R26 and assembly. For Hot Rod Deluxe III models, remove the Volume POT R6 assembly.
6. Remove Bass Cap C5. Mid Cap C6. Treble Cap C7 and Slope Resistor R12
7. Remove the Input Jacks. This part is snapped into the PCB then soldered, I find it easiest to remove the solder from the back side first then remove the jack. You can also clip the leads on the solder side of the PCB after the solder is removed to aid in removing the input jack.



CAUTION: The circuit board is very fragile and the solder pads can easily become separated from the circuit board if extreme care is not used. Carefully examine each solder pad after removing the component to make sure the solder pad is intact. If the solder pad is damaged you will need to carefully scrape away the solder mask of the trace next to the hole, bend the lead to the trace and solder directly to the trace. Remember to always check continuity with your multi-meter to insure that you have a good connection between components.

Adding the New Components.

The leads of the components may need to be bent to match the holes in the PCB. The orange drops, mica caps and resistors do not have polarity so it does not matter which lead is installed in which hole. The filter cap and input jack must be installed exactly per instructions.

Tone Stack/Twin Mod

1. Install the .1 WIMA box cap at C5
2. Install the .015 WIMA box cap at C6
3. At C7 install the 270p MLCC cap.
4. At R12 install the 100K 1/4 watt resistor (the small 100k resistor)
5. At the Mid Tone Pot, bridge pins 2 and 3 which are the holes closest to the Power and Standby Switch. Use a clipped-off lead from one of the other installed components. You can also bridge the pins on the solder side of the board.

Power Stiffening—Install the 100uf/450V cap at C31.

Volume—You have two options. Either install the 100k audio pot where the master volume was to get more controllable volume on the Drive channel only, or move the Volume pot to the Master Volume spot and install the 100k audio pot in Volume to get more controllable and more bedroom level friendly volume from the clean channel as well as more controllable volume in the drive channel. For Hot Rod Deluxe III models, install the provided 100k pot in Volume.

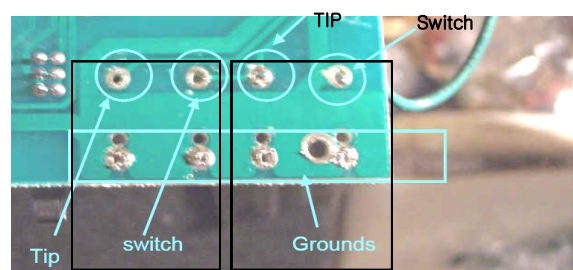
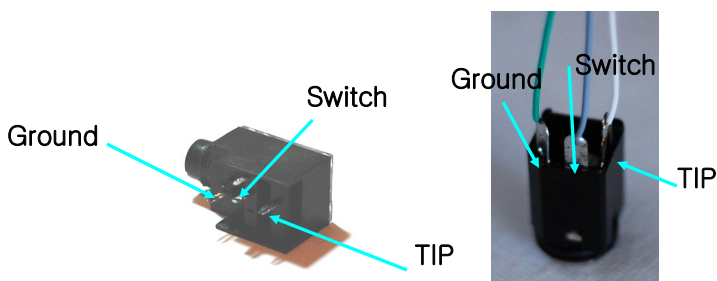
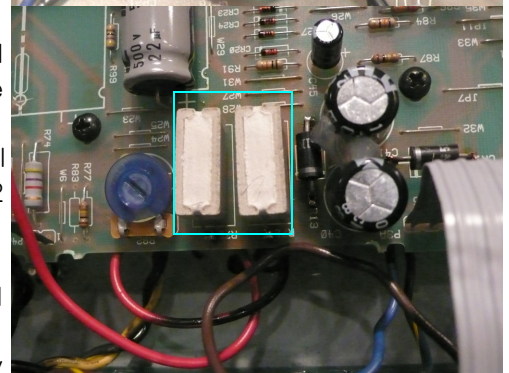
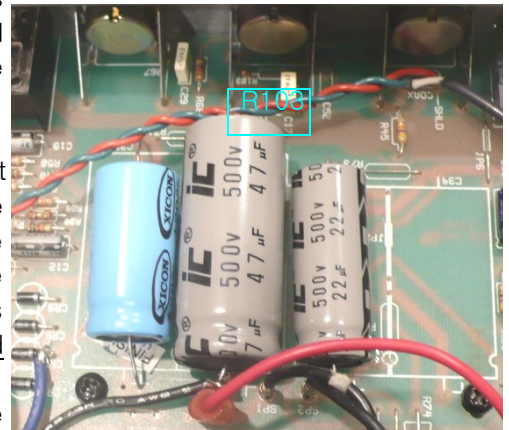
Brightness—Install a 100pf mica Cap across pins 2 and 3 of both the Volume and Drive pots, on the solder side of the PCB

Power Resistors—Install the 470 ohm power resistors at R78, and R79. Install them so they sit off the PCB by about 1/4 inch. Make Sure the leads are bent about 1/16 of an inch off the resistor

Plate Load Resistors.—At R57 install the 82K 1/2 watt resistor. Install 100K 1/2 watt resistors at R58, R4, R11, R16 and R22*. (* R 2 2 will not be installed if you are doing the Global Master Volume Mod, see pg. 7)

Reverb Mod—Remove R103 just under the reverb pot. I recommend clipping both leads from the component side of the PCB.

Input Jacks—Install the new input jacks—The leads are already dressed. There are two versions of the Hot Rod Deluxe, in each case there are three wires to connect. The Ground, switch, and Tip. If your old jacks look like the one on the left wire according to where the old pins were. If your PCB looks like the one on the right then wire for that configuration.



If you purchased the complete mod kit you can skip to the next page.

If you purchased the supreme mod kit replace all the electrolytic caps as indicated below.

C1	22/25	AX
C8	1/50	AX YEL
C9*	22/25	AX
C33	22/500	AX
C35	22/500	AX
C36	22/500	AX
C56**	22/25	AX

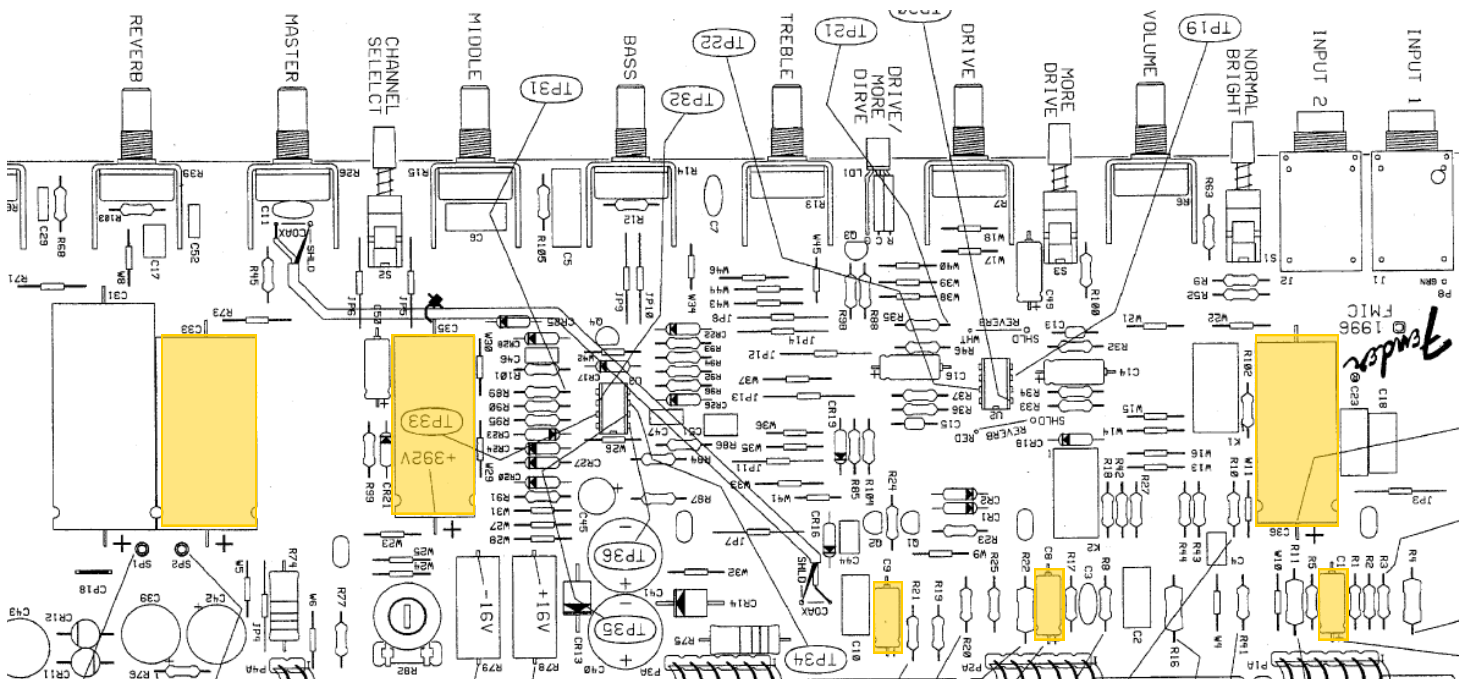
To the left is the chart for all the caps and where they go with position numbers. Below is the board layout. Make sure you mind the polarity of the caps, they must be inserted the right way or your amp will have problems which could be serious.

The circuit board will have a "+" sign closest to the hole where the positive lead of the cap goes. The axial caps have an indented ring on the positive side and a "-" sign in an arrow pointing to the negative side. For radial caps the longer lead is the positive side and there is a "-" sign in a band closest to the negative terminal.

*C9 will not be installed if you're doing the Global Master Volume Mod, see pg. 7

**C56 is on some later models.

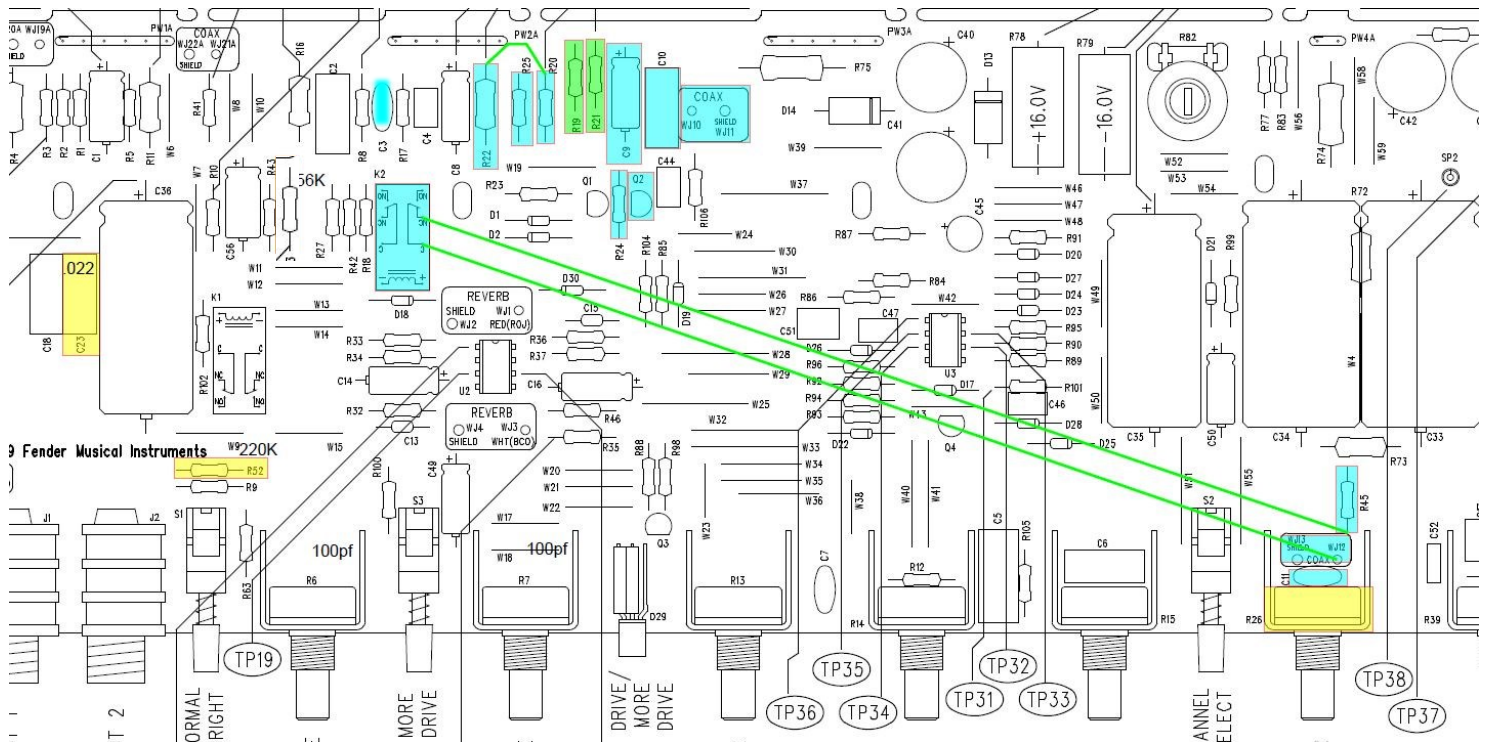
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Our Global Master Volume Mod will allow the master volume control to work on both the clean channel and the drive channel. It will also turn the drive channel into a second clean channel with a single selectable boost stage. This mod will allow you to have total control over your volume and also allow you to drive your clean channel at the volume control and dial back the overall volume with the newly functioning master volume control.

Remove the follow components and use the diagram below as a guide.

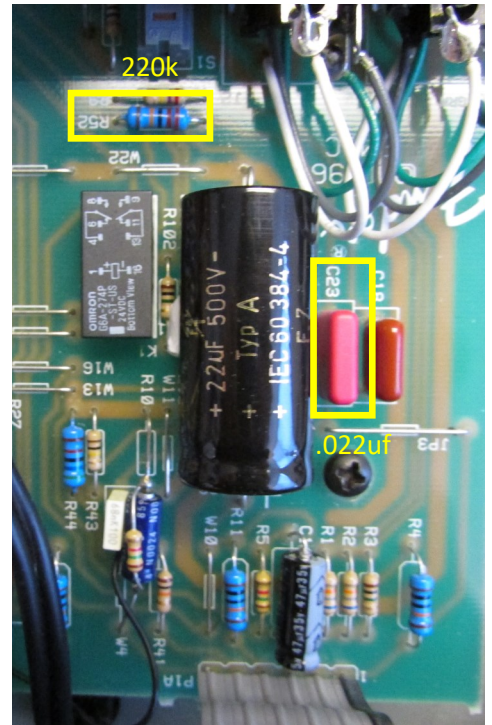
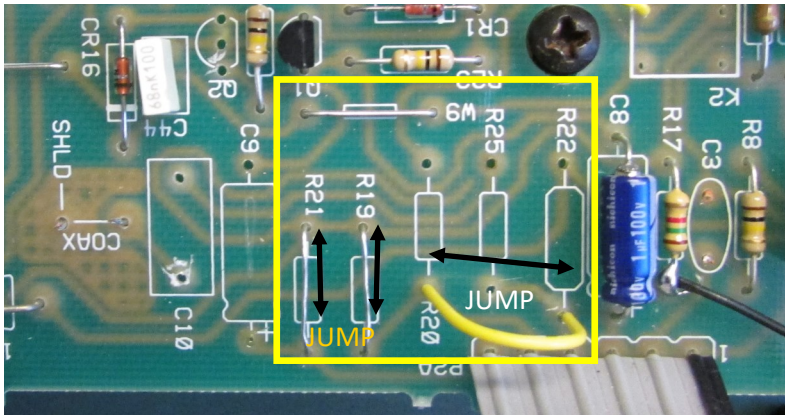
1. Remove the capacitors at C3, C9, C10, C11, C23
2. Remove the Relay at K2
3. Remove the resistors at R19, R20, R21, R22, R24, R25, R45, R52
4. Remove transistor at Q2
5. Remove the COAX cable that runs from the master volume pot to the left side of C10



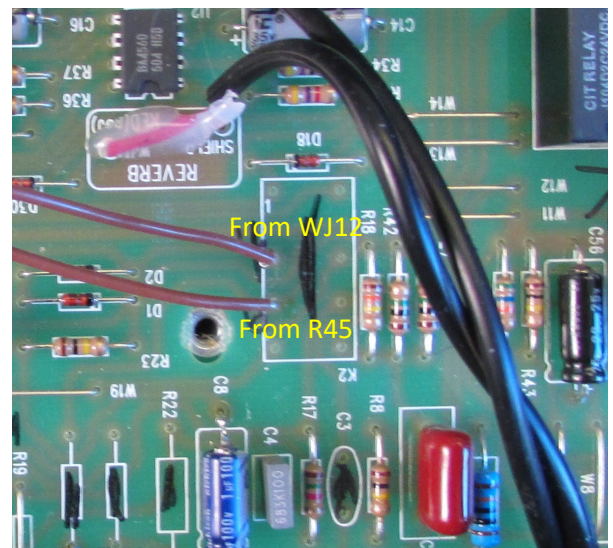
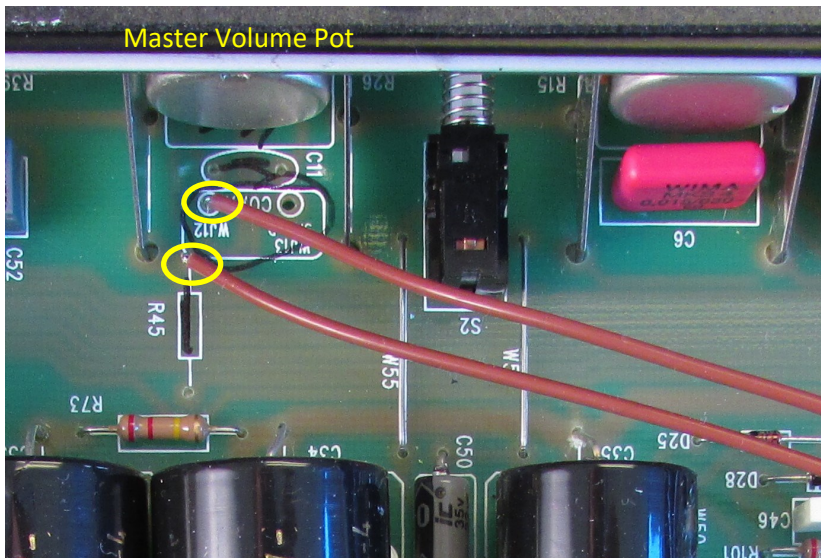
Blue components are removed
Yellow components will be changed
Green highlights will be jumped

Adding the New Components.

1. Install the 220k resistor at R52
2. Install the .022 WIMA cap at C23
3. Jump each R19 and Jump R21 using a clipped lead
4. Jump the bottom hole of R22 to the bottom hole of R20 using a clipped lead.



Finally, Wire WJ12 below the master volume pot to the 2nd hole down from the removed relay at K2, as well as the hole closest to the top of the board of R45 to the 3rd hole down from the removed relay at K2 (as pictured below).

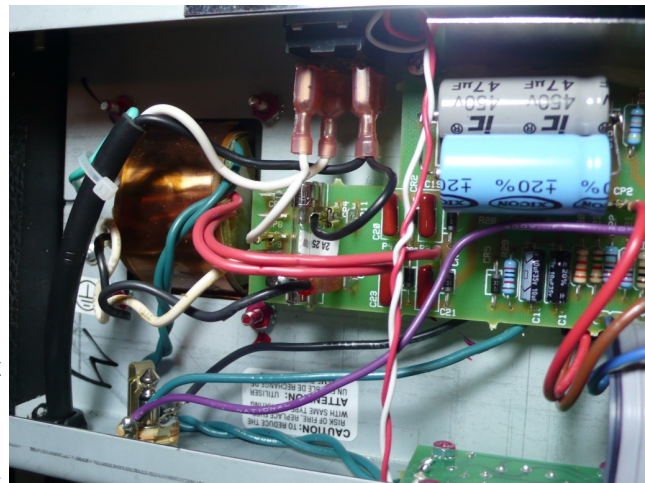
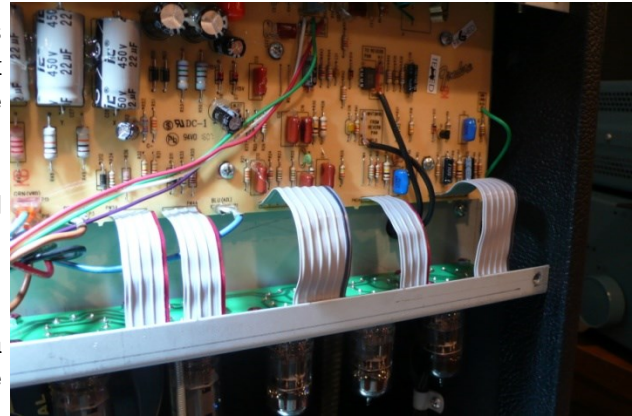


Putting the Amp Back Together.

Make sure that you have clipped all the excess leads from the solder side of the board and that all your new solder joints are secure before continuing.

1. Carefully put the PCB back into place making sure that the pots, switches, and input jack all line up with the control panel.
2. Replace all of the PCB mounting screws.
3. Re-install the small PCB that holds the tubes.
4. Make sure all the ribbon cables have a smooth path with no kinks or sharp turns in the cable.
5. Dress the Transformer leads!!! Poor lead dress is a large part of the noise in an amp. Instead of using a new cable tie to put the wires back like we found them we are going to use standard wiring techniques for proper tube amp design. Twist the green heater wires and position as shown. All other lead pairs should cross each other at 90 degree angles to avoid noise, hum, and oscillation.
6. Re-install all the washers for the pots and jacks use the isolation washers on the input jacks as shown. Do not over tighten the jacks for the effects loop or footswitch.
7. Make sure all the ribbon cables have a smooth path with no kinks or sharp turns in the cable.
8. Glue ALL the caps to the board as well as the lead wire for the reverb. You can omit this step if you want but securing all the caps to the board will decrease the likely hood that they will get shaken loose in travel or by vibrations from the speaker.
9. Plug the speaker back into the speaker jack.
10. Re-install the control knobs and install the washer and nut on the new input jack.
11. **DOUBLE CHECK ALL YOUR WORK.**
12. Replace the back panel and make sure to tighten the chassis screws if you loosened them.

ENJOY YOUR NEW AMP



Trouble Shooting

If the amp does not turn on (no light, no sound), check that the power transformer was hooked back up correctly after the mods.

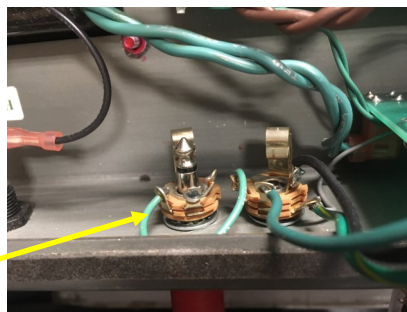
If the amp turns on (light is on) but isn't producing any sound, plug your guitar into the "Power Amp In" on the control panel and play. This bypasses the preamp and sends the signal straight into the phase inverter and power section.

- If you get a clear signal then the problem is in the preamp.
- If it sounds bad / has no sound at all, check the 2 resistors that were installed on the tube socket PCB; R57 and R58. Reflow them with new solder to make sure they're making a good connection.

If the problem seems to be in the preamp, go through and touch up each of the solder points that were done with the kit and flow a little bit more solder on them to make sure they're connecting well. Double check all the values installed as well to make sure all the components made their way into the right placements.

Check that the speaker is plugged into the correct jack.

The last thing to check is that none of bles going from the main PCB to the PCB have any breaks. These can break board and cause all kinds of problems. is stranded as well so if 1 single strand can test ok for continuity but won't be signal very well.



the ribbon ca-
tube socket
very close to the
The wire in them
is hanging on it
carrying the

If you're still unable to troubleshoot what with your amp, reach out to us by email at Info@leadingtoneseattle.com or by phone at 206-523-8663

may be wrong