AB763 Blackface Amp Modifications

Includes modifications for the 65 Deluxe Reverb Reissue and 68 Custom Deluxe Reverb

By Rob Robinette, edited 5/25/2017

Have comments or corrections? Email rob at: robinette at comcast dot net

This webpage is available in PDF form: ***AB763 Modifications.pdf***

WARNING: A tube amplifier chassis contains lethal high voltage even when unplugged--sometimes over 700 volts AC and 500 volts DC. If you have not been trained to work with high voltage then have an amp technician service your amp. Never touch the amplifier chassis with one hand while probing with the other hand because a lethal shock can run between your arms through your heart. Use just one hand when working on a powered amp. See more tube amplifier safety info here.

'AB763' was Fender's internal model designation for the 1963 blackface circuit. The "763" in the model name comes from the circuit change date of 7-1963. It was used in the *Deluxe Reverb, Twin Reverb, Super Reverb, Concert, Band-Master, Showman, Pro, Vibrolux, Vibroverb, Tremolux and no-reverb Deluxe*. For information about the AB763 model differences see this. The AB763 circuit is considered by most to be **the pinnacle of Fender amplifier design**. This is why so many post-AB763 amps were "blackfaced" back to AB763 specs. I usually prefer switchable mods that keep the amp's original tone in place. The often unused Normal channel is also a great place to mod away with to make that channel interesting and usable.

AB763 Model Differences

Table of Contents and AB763 Overview

	Preamp Stages	FX	Preamp Plate V	Pwr Tube Plate V	Power Tubes	Rectifier	Speakers
Deluxe	2	Tremolo	170	410	2 x 6V6	GZ34	1x12, 8 ohm
Deluxe Reverb	3	Tremolo & Reverb	180	415	2 x 6V6	GZ34	1x12, 8 ohm
Vibrolux	2	Tremolo	200	410	2 x 6L6	GZ34	1x12, 8 ohm
Tremolux	2	Tremolo	200	410	2 x 6L6	GZ34	Head Cab, 4 ohm
Pro	2	Tremolo	275	440	2 x 6L6	GZ34	1x15, 8 ohm
Band-Master	2	Tremolo	275	440	2 x 6L6	Solid State	Head Cab, 4 ohm
Concert	2	Tremolo	270	440	2 x 6L6	Solid State	4x10, 2 ohm
Vibroverb	3	Tremolo & Reverb	280	460	2 x 6L6	GZ34	1x15, 8 ohm
Super Reverb	3	Tremolo & Reverb	270	460	2 x 6L6	GZ34	4x10, 2 ohm
Single Showman	2	Tremolo	280	450	4 x 6L6	Solid State	Head Cab, 8 ohm
Dual Showman	2	Tremolo	280	450	4 x 6L6	Solid State	Head Cab, 4 ohm
Twin Reverb	3	Tremolo & Reverb	270	460	4 x 6L6	Solid State	2x12, 4 ohm

65 DRRI	3	Tremolo & Reverb	190	415	2 x 6V6	*5AR4	1x12, 8 ohm
68 CDR	3	Tremolo & Reverb	190	415	2 x 6V6	*5AR4	1x12, 8 ohm

Note the Preamp Plate Voltage difference between the Deluxe Reverb *and the higher powered amps.*

List of Mods

robrob Normal Channel Reverb Mod **The preferred way to apply reverb and tremolo to both channels and allow channel jumpering**.

Fender Normal Channel Reverb Mod Apply reverb and tremolo to both channels the way Fender did it in the *68 Custom Deluxe Reverb*.

"Fritz" Mod Classic mod to send both channels through the reverb and tremolo effects.

Lead Channel Mod Do something constructive with your unused Normal channel.

Plate Load Resistor Mod Add preamp gain with a simple resistor swap

Boost Preamp Voltage Add gain to the low voltage *Deluxe*, *Deluxe Reverb*, *Vibrolux* and *Tremolux* amps.

3-Way Negative Feedback Switch Mod Make your amp more versatile.

Master Volume Mod Add a simple Trainwreck Type-3 PPIMV master volume.

Master Volume + Vox Tone Cut Master volume AND late-in-the-circuit tone control. I love this thing.

Raw Switch Mod Eliminate the tone stack and boost volume.

Tone Stack Mods Why have two identical tone stacks? Mod one of them.

Firm Up the *Deluxe* and *Deluxe Reverb*'s Loose Low End Make it sound more like a *Twin Reverb*.

Tremolo Cut Switch Mod Add preamp gain with this simple and very useful mod.

Slow the Tremolo Slow is good.

Stop Tremolo Ticking Simple one cap fix.

Always On Tremolo Plug Leave your tremolo footswitch at home.

Add a Reverb Dwell Control

Max Reverb Mod Want more reverb? This is how.

Reduce Ice Pick Highs Take the edge off your tone with a single cap.

Channel Mixing Resistors Bright Cap Mod Get a little more brightness from either channel.

Power Tube Grid Leak Mod Marshall style 100k Grid Leak resistors.

Reduce Resistor Hiss Mod Swap out those noisy carbon comp resistors.

Reduce Reverb Noise & Oscillation Simple mod to clean up the reverb.

Dumble Mods

Convert a *Band-Master* Head into a *Vibrolux, Tremolux, Pro, Concert or Reverbless Vibroverb or Super Reverb*

Convert a *65 Deluxe Reverb Reissue* to a *68 Custom Deluxe Reverb*

Speaker Suggestions

Run 6V6 Power Tubes in a 6L6 Amp Less output power, small bottle tone with more power tube distortion.

Run 6L6 Power Tubes in a 6V6 Amp A tone change with little power gain.

Run 2 Power Tubes in a 4 Power Tube Amp Cut your output power almost in half.

Run 2 6V6 Power Tubes in a 4x6L6 Amp Cut your big amp's power by 65%.

Tube Tweaks It's surprising how much you can do with simple preamp tube swaps.

"Blackface" a Silverface Amp Make your Silverface amp sound right.

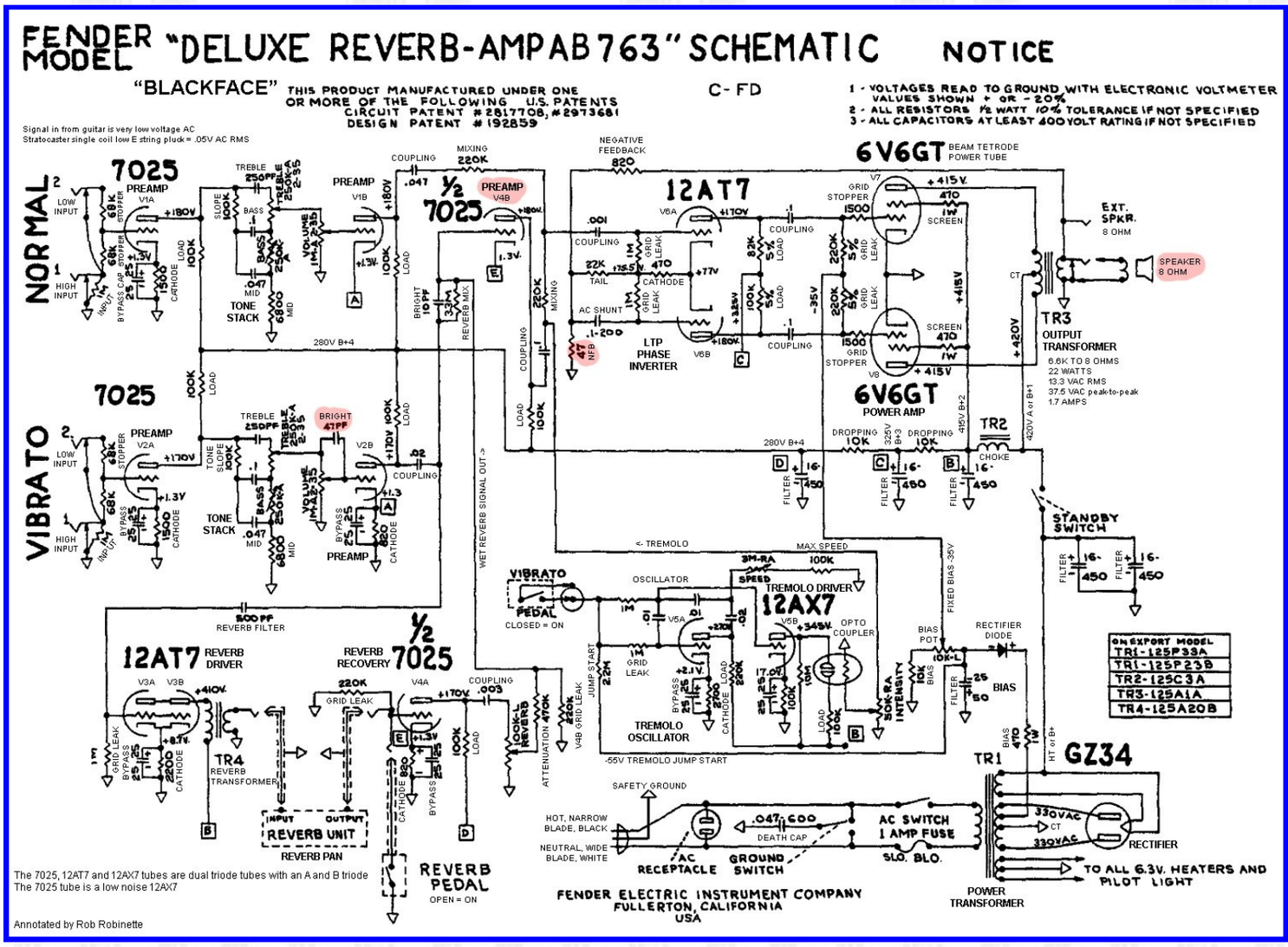
Convert a Silverface Amp's Bias Balance circuit to Adjustable Bias + Bias Balance

Annotated AB763 Schematic & **Annotated AB763 Layout** Circuit study aids.

***65 Deluxe Reverb Reissue* Schematic and Layout**

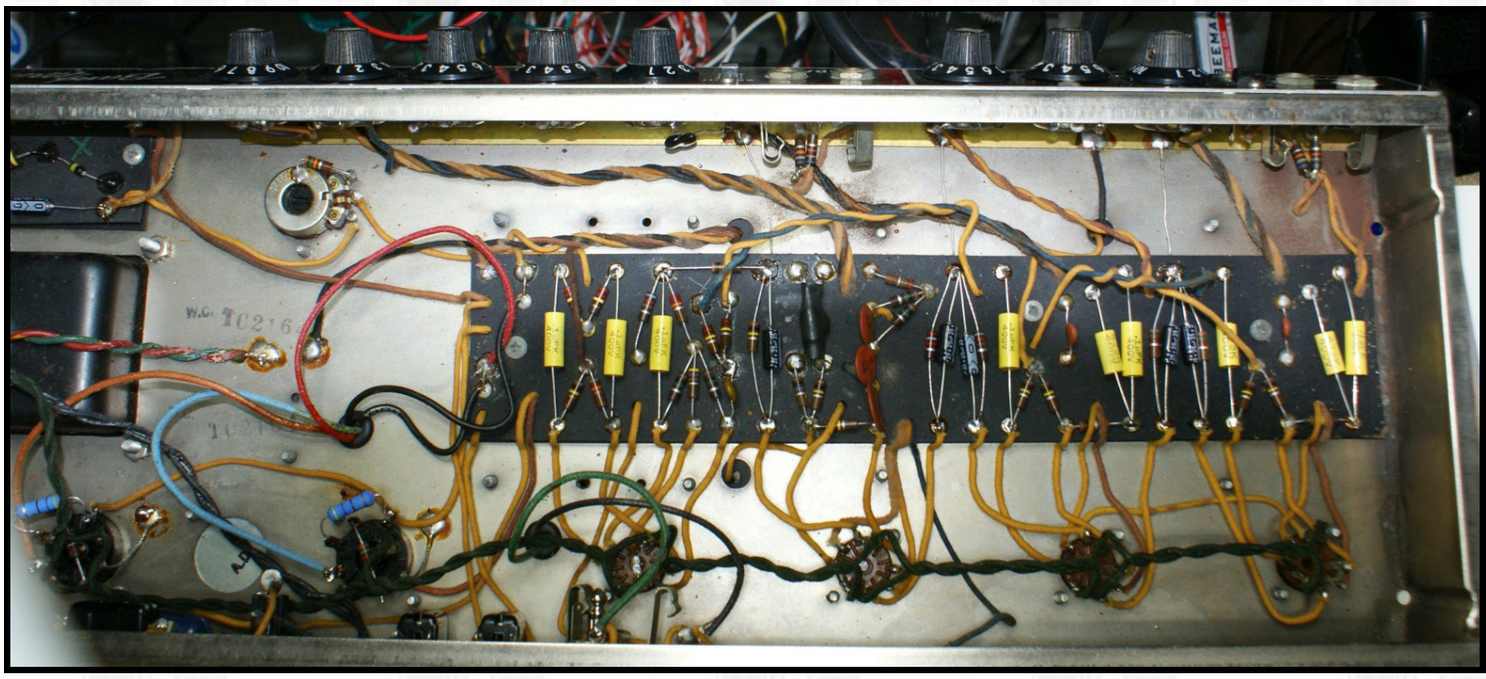
***68 Custom Deluxe Reverb* Schematic and Layout**

AB763 Annotated Schematic



Click the image for the full size schematic. Every component function is listed.

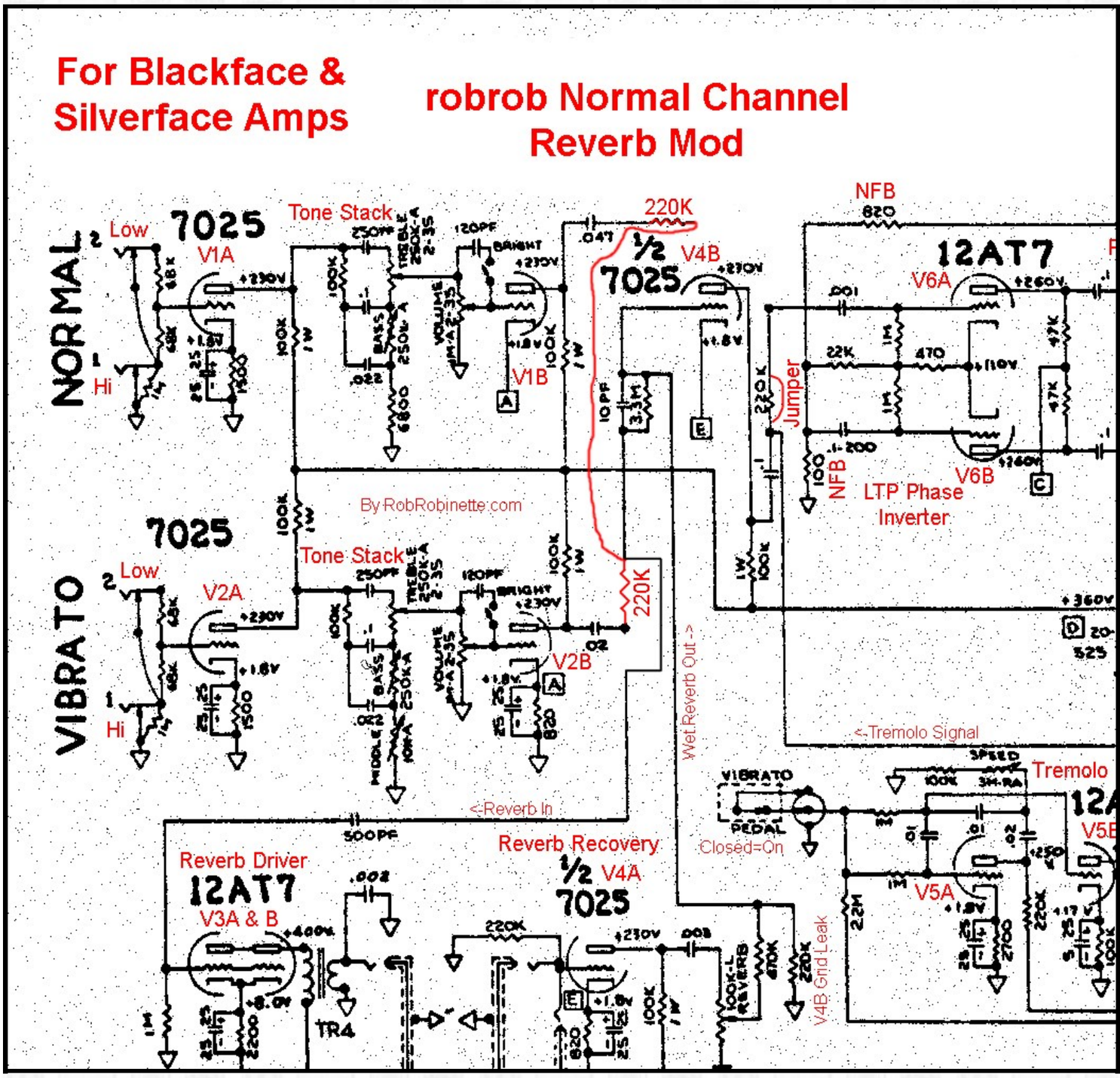
Band-Master Chassis



robrob Normal Channel Reverb Mod

This is my recommended mod to add reverb and tremolo to the Normal channel in blackface and silverface amps. Using this method we join the two channels using their own coupling caps and mixing resistors in a relatively noninvasive way. With each channel using a coupling cap and mixing resistor to feed the reverb circuit and V4B preamp, both channels' output are perfectly balanced with minimum attenuation and channel interaction.

By preserving the Normal channel coupling cap we can use it to voice the channel such as in the Lead Channel Mod. The robrob Reverb Mod is also superior to the Fender Reverb and "Fritz Mod" shown in the next two sections because retaining both mixing resistors prevents the severe signal attenuation and/or channel interaction that occurs with the other reverb mods. The robrob Reverb Mod does not affect the Vibrato Channel's tone at all. **This mod also puts the two channels in phase so you can jumper the channels together** for a slightly thicker tone. **This is an excellent mod and I highly recommend it**. This mod is also easy to reverse if you ever want to return to the stock Fender circuit.



Both channels have a coupling cap and mixing resistor feeding the reverb circuit and the V4B preamp stage. The mixing resistors prevent channel interaction.

Here's the mod, refer to the layout below:

Note: if you're going to do the Lead Channel Mod then do it first because this mod places the Normal channel coupling cap across the cathode resistor and bypass cap.

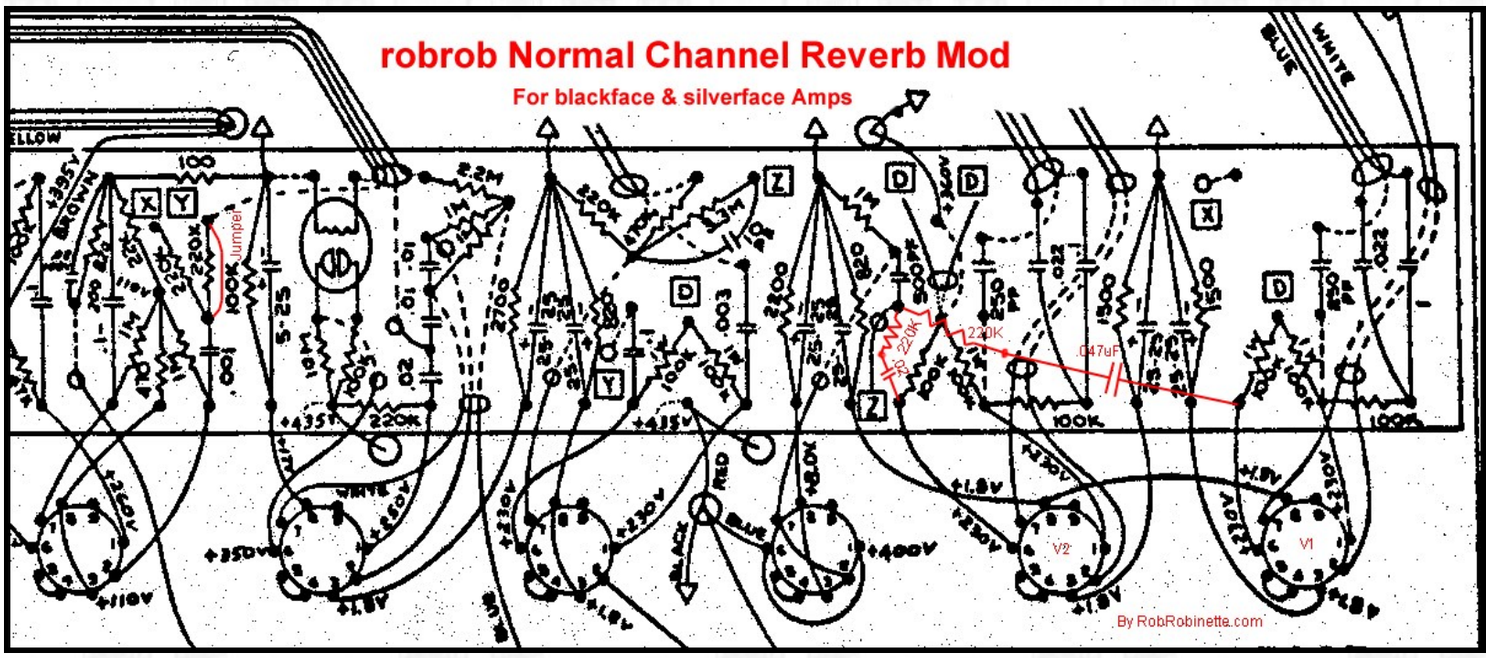
1. Desolder and pull the Vibrato channel .02uF coupling cap output end loose and bend it upwards. Twist the leads of two 220k 1/2 watt resistors together (new mixing resistors) and solder the twisted end into the empty eyelet. Solder one of the resistors to the coupling cap's free lead.

2. Desolder and pull the Normal channel's .047uF cap's output end and bend it toward the new Normal channel mixing resistor from step 1, solder the .047uF coupling cap to the new Normal channel 220k mixing resistor

installed in Step 1.

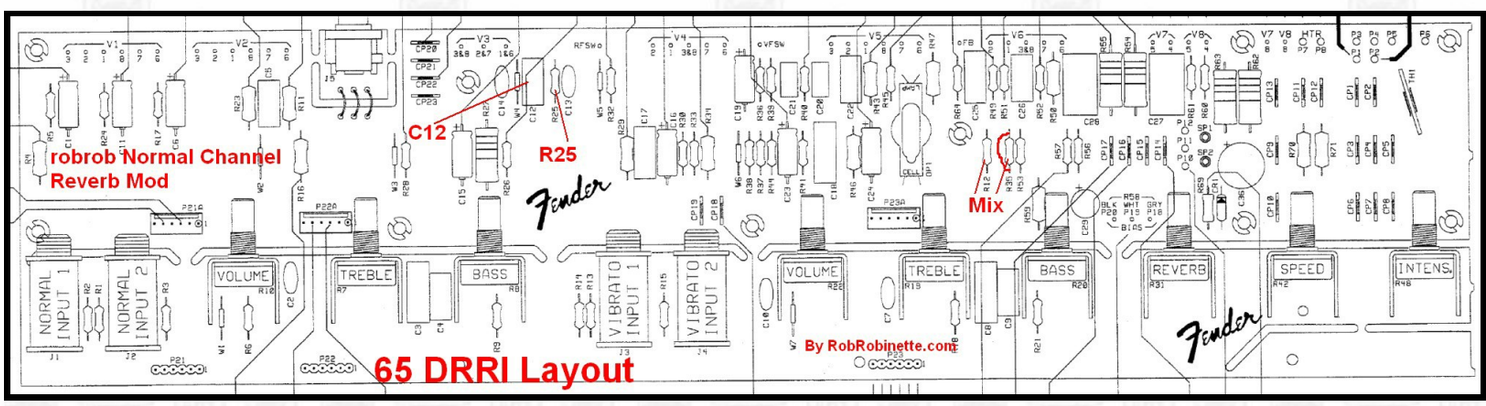
If you want to change the Normal channel cap's value then simply remove the original cap and solder in the cap of choice as shown in the layout below.

3. Jumper around the now unneeded original Vibrato channel mixing resistor (far left below).



The Normal channel's coupling cap + new 220k mixing resistor easily span the distance to the Vibrato channel's new 220k mixing resistor. Don't forget the jumper around the original 220k mixing resistor at far left.

For the 65 DRRI you need to do the following:



The Normal channel 220k mixing resistor is R12 on the circuit board. Its output end (the end connected to R35 and C25) should be carefully unsoldered and lifted.

Solder a jumper wire from the lifted end of R12 and connect it to the input end of the 3.3M Reverb Mix resistor R25 (R25's input end is connected to C12).

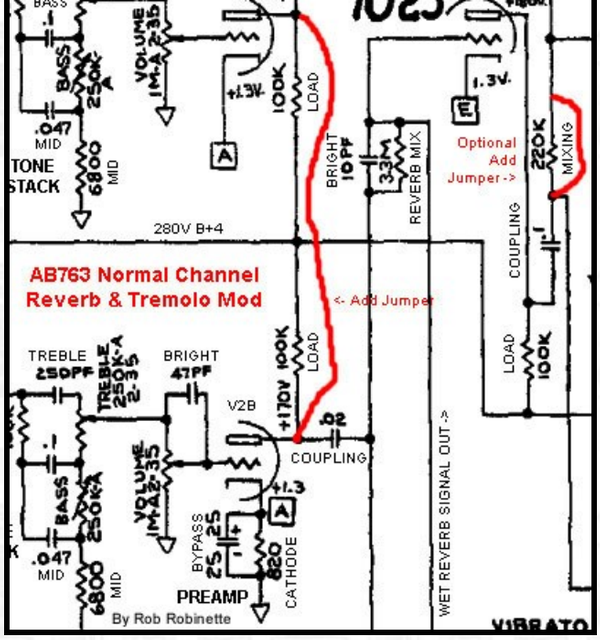
For the Vibrato channel a new 220k mixing resistor needs to be inserted: lift the output end of C12 (Vibrato channel coupling cap). The output end is connected to R25.

Connect the lifted end of C12 with its open pad with a 220k 1/2 watt resistor.

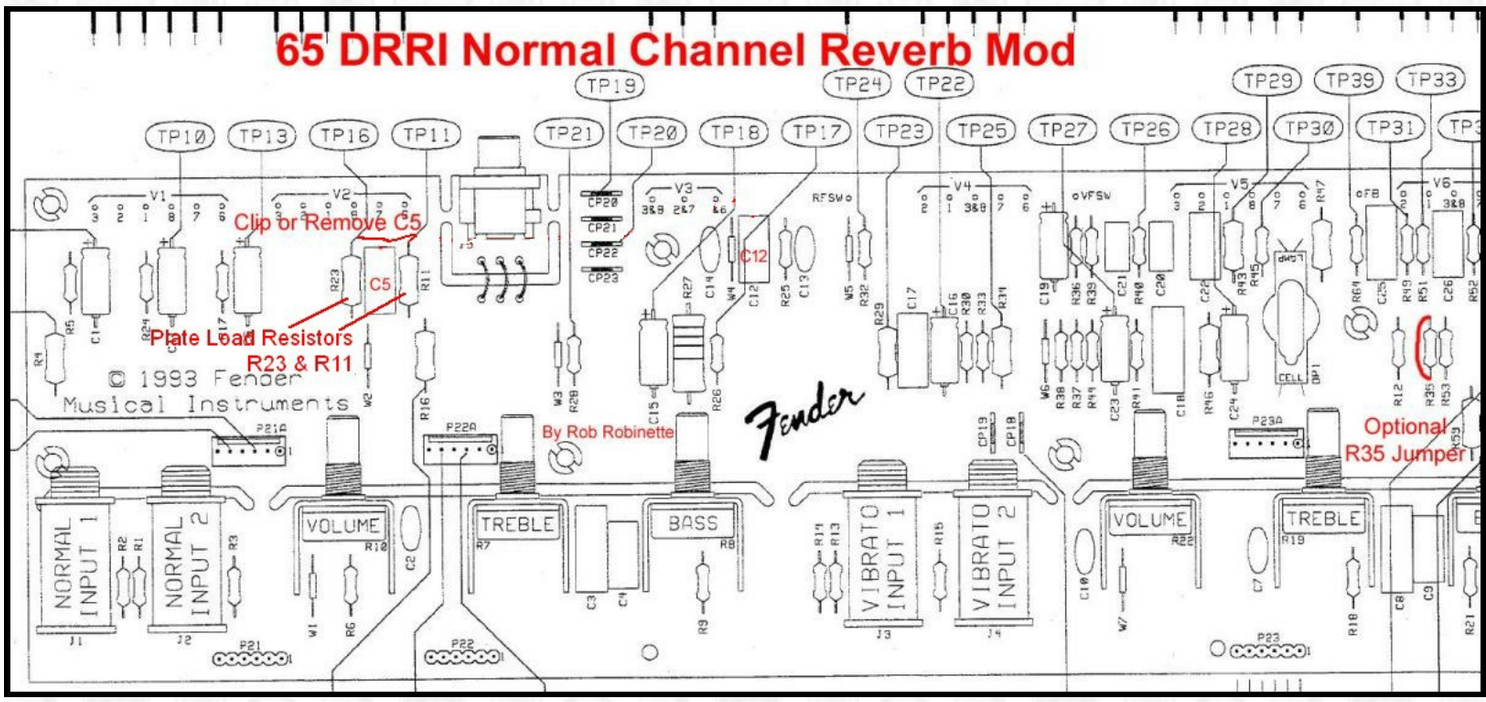
Then place a jumper around the unneeded original Vibrato channel 220k mixing resistor R35.

Fender Normal Channel Reverb Mod

This simple mod is how Fender added reverb to the 68 Custom Deluxe Reverb's Normal channel. It routes a silverface amp's Normal Channel through the reverb and tremolo effects and through the V4B third preamp gain stage. It does not affect the Vibrato Channel's tone. This mod also **puts the two channels in phase** so you can jumper the channels together for a slightly thicker tone. This mod removes the Normal Channel's .047uF coupling cap and both channels guitar signal flow through the Vibrato Channel's .022uF coupling cap. **This method of running both channels through reverb and tremolo does not use mixing resistors so the two channels affect one another which can cause fluctuating attenuation and distortion. This is why I recommend the method above**.



To send the Normal Channel signal through the reverb and tremolo you simply connect the V1B and V2B plates at the bottom (input, nearest tubes) of the two coupling caps. You must also clip or remove the V1B .047uF coupling cap on the right. I recommend just clipping a leg of the cap right at the eyelet so you can easily re-solder it if you ever want to reverse the mod. With this mod I would also recommend jumpering around the now unneeded Vibrato channel 220K channel mixing resistor (at far left) for a slightly boosted, slightly brightened tone. You can use a temporary alligator clip lead to try the mixing resistor bypass. Click the image to see the full size version. Original photo by John Chabalko.



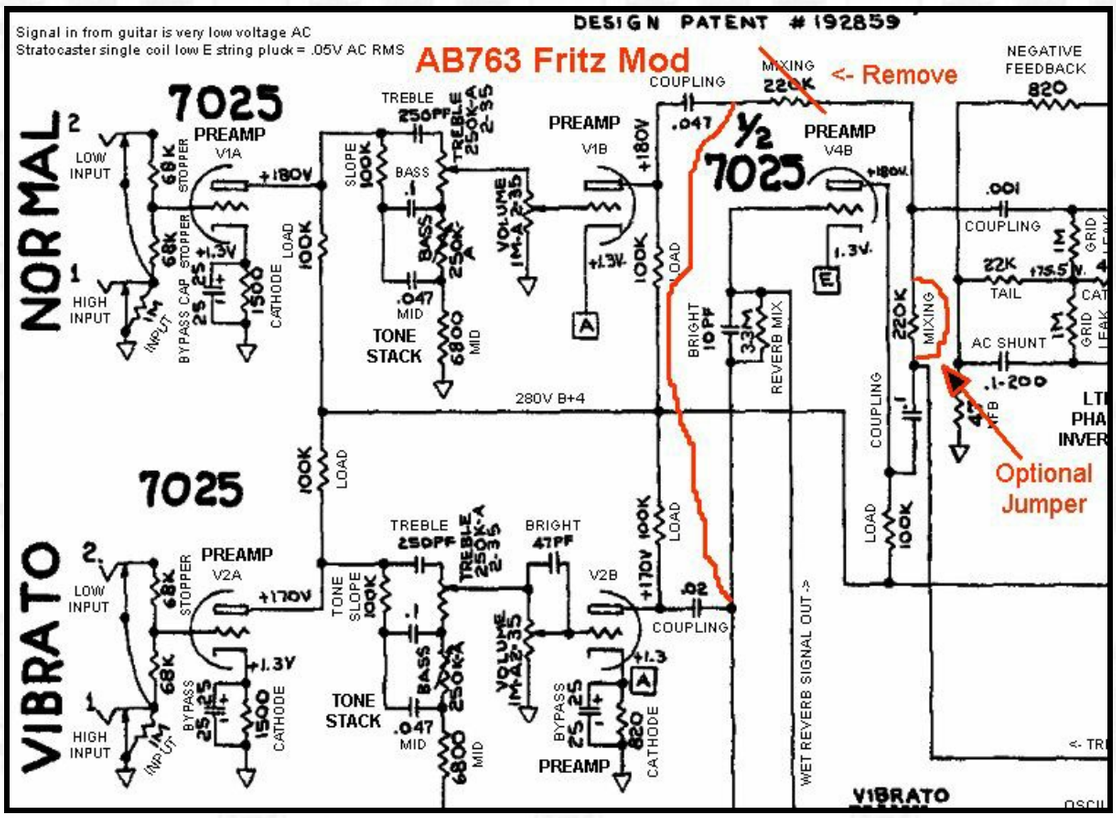
To do this mod to the 65 Deluxe Reverb Reissue *you would connect the top of Resistors R23 & R11 with a jumper wire. Clip or remove capacitor C5. Optionally jumper around resistor R35 at far right (now unneeded Vibrato Channel Mixing resistor).*

This mod is already done in the *68 Custom Deluxe Reverb*.

The "Fritz Mod"

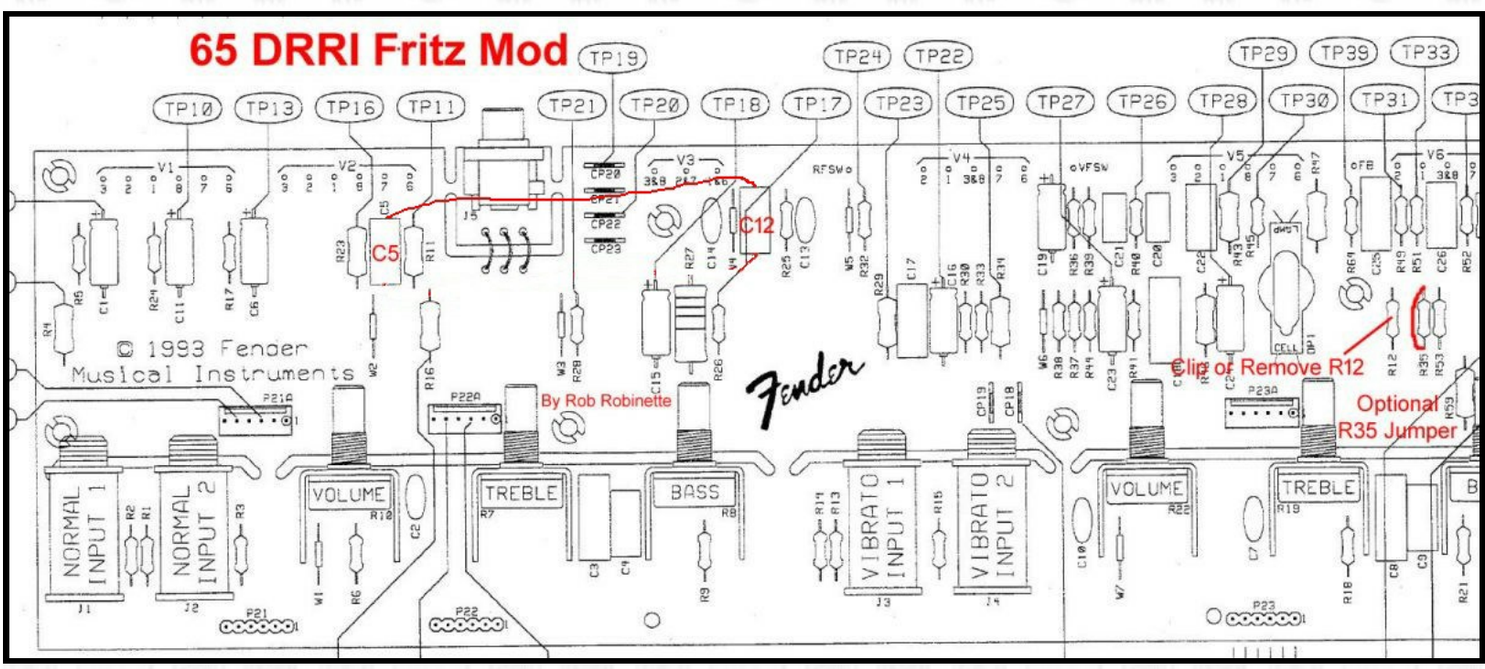
The Fritz Mod is very similar to the above Normal Channel Reverb Mod except that it keeps the Normal

Channel coupling capacitor in the circuit. The problem with this mod is the two channels' coupling caps form a capacitive voltage divider and cut the drive from both channels significantly. I recommend the above [robrob Reverb Mod](#) above instead. Like the other Normal Channel Reverb Mods above the Fritz Mod also puts the two channels in phase so you can jumper the channels for a fatter tone.



The channels are joined after the coupling caps.

The channel jumper is connected to the output (upper) end of the coupling caps. You must clip or remove the left (Normal Channel) 220k channel mixing resistor at far left. I also recommend an optional jumper around the now unneeded Vibrato Channel 220k channel mixing resistor at far left for a slightly boosted, slightly brightened tone. Click the image to see the full size version. Original photo by John Chabalko.



***To do the Fritz mod to the* 65 Deluxe Reverb Reissue** *you would connect the output end of capacitor C5 to the output end of capacitor C12. Clip or remove resistor R12 at far right. Optionally jumper around resistor R35 (Vibrato Channel Mixing resistor next to R12). The circuit board has these parts labeled.*

Lead Channel Mod

Many AB763 players never use the Normal Channel since it has lower gain and no effects. **If you don't use it you should consider voicing it as a "lead" channel** by changing out only four components. Three of these component changes are from the 1987 Marshal "Plexi" lead channel preamp. They filter out excess bass frequencies that tend to boom or get muddy when severely overdriven. **You will also gain some clean headroom and maximum volume because low frequencies use up a lot of the amps power so removing very low frequencies allows more amplification of the remaining audio frequencies**.

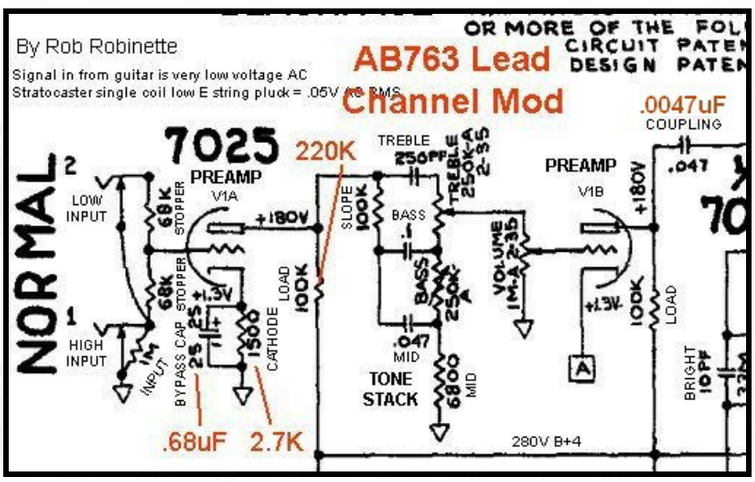
With these four changes you can push the Lead Channel very hard with gain and boost pedals and get a nice, tight, modern overdrive tone. Reverb and delay effects and hot humbucker pickups will also sound better through this "lead" channel because the reduction in low frequencies will keep the amp from being overwhelmed. This mod will also make the channel more pedal friendly in general. **I really love the Lead Channel Mod**.

When evaluating this mod be sure and try a boost pedal to get the gain and distortion up--this is when this mod really shines.

This mod will not affect the Vibrato Channel. You'll also be able to run more reverb with the Lead Channel because the very low freqs aren't there to freak out the reverb circuit and springs.

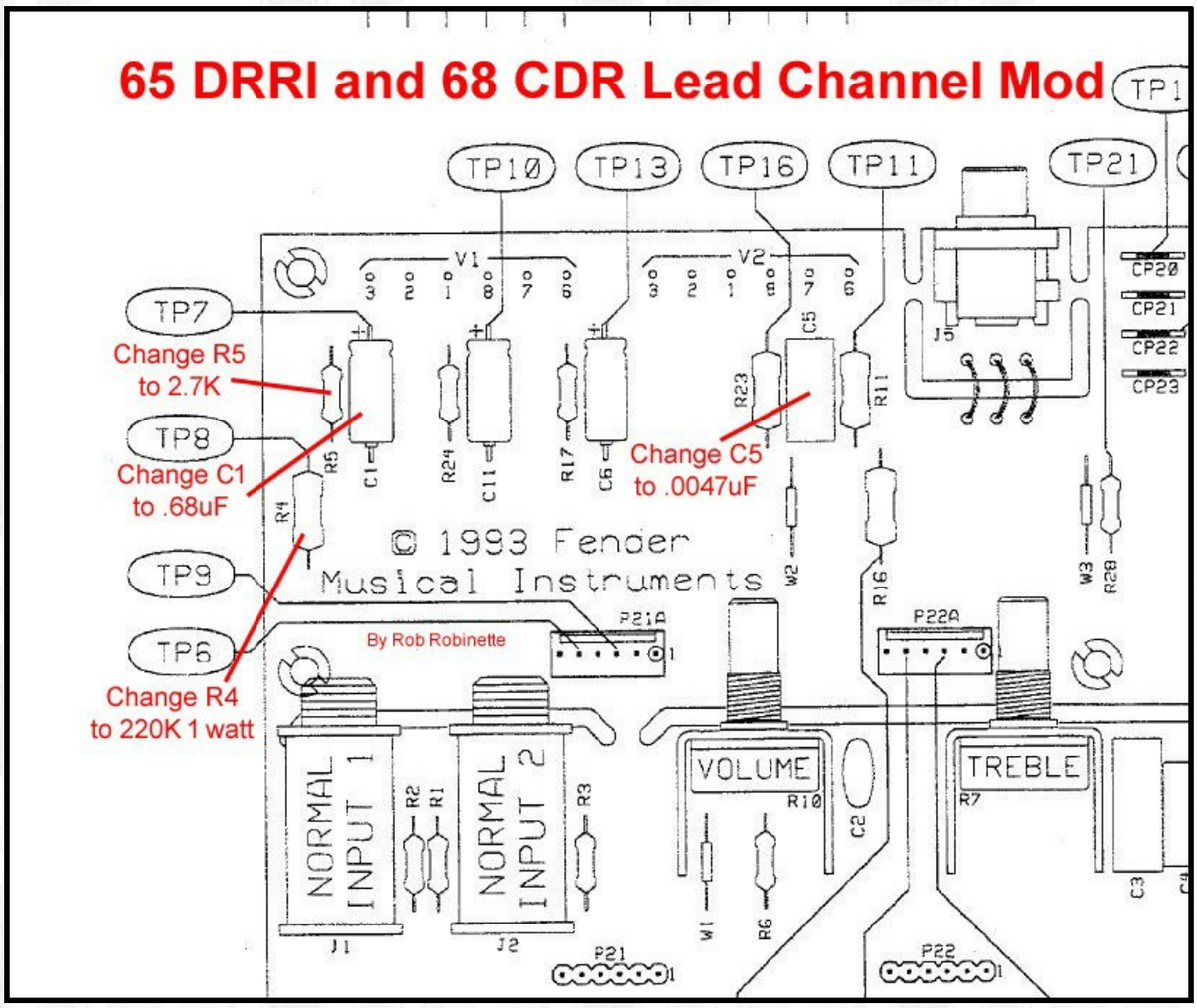
Here's an excellent demo showing the difference between the 5E3 unmodified Bright channel and the "Lead Channel:" [kdj 5E3 Lead Channel YouTube Demo] The difference between the Vibrato and "Lead Channel" won't be quite so stark in the AB763.

The **2.7k cathode resistor** is used in many high gain preamps and will bias the preamp cool and make creamy asymmetric distortion more likely. The **smaller bypass cap** will boost more mids and highs. The **.0047uF coupling cap** is standard in many modern high gain amps and will trim unneeded low frequencies to tighten up the overdrive tone. This smaller cap will sweeten the overdrive tone by reducing bias drift recovery time of an overdriven second preamp stage. The V1A **220k 1 watt plate load resistor** will add gain to the channel's first preamp gain stage and make overdrive more likely in the amp's following gain stages.



V1A Load resistor from 100K to 220K 1 watt

For the mod you increase the V1A cathode resistor from 1.5k to 2.7k (1/2 watt), reduce its bypass cap to .68uF (micro Farad) 25v, increase the plate load resistor from 100k to 220k 1 watt and reduce the big V1B .047uF coupling cap to .0047uF 450V (or higher voltage and yes, that is with two leading zeros).

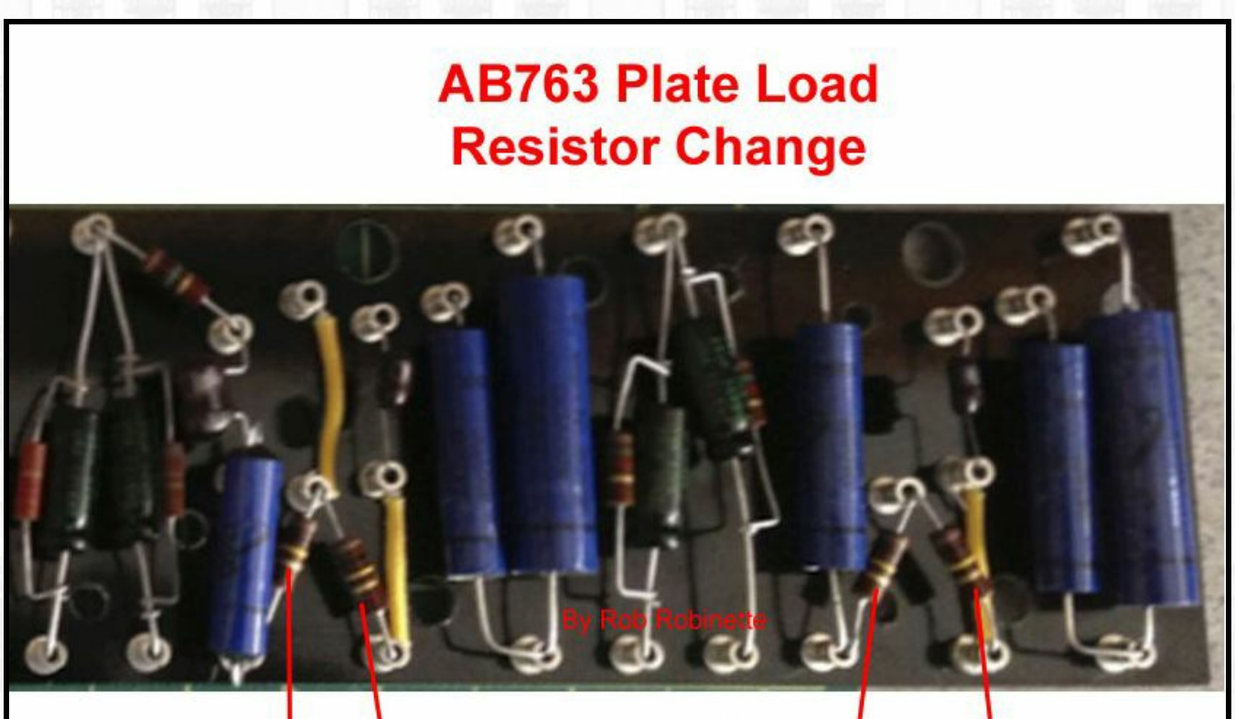


For the 65 Deluxe Reverb Reissue & 68 Custom Deluxe Reverb *the V1A cathode resistor is R5. The V1A cathode bypass capacitor is C1. The V1A plate load resistor is R4. The V1B coupling capacitor is C5.* ***On the 68 CDR cap C5 is deleted*** *so don't worry about it. The circuit board has these parts labeled.*

Plate Load Resistor Mod

If you would like more gain in the preamp you can swap out one or more of the standard 100k plate load resistors with 220k resistors. A larger plate load resistor will give more signal swing and boost gain. I recommend going with 1 or 2 watt resistors to reduce resistor noise (hiss).

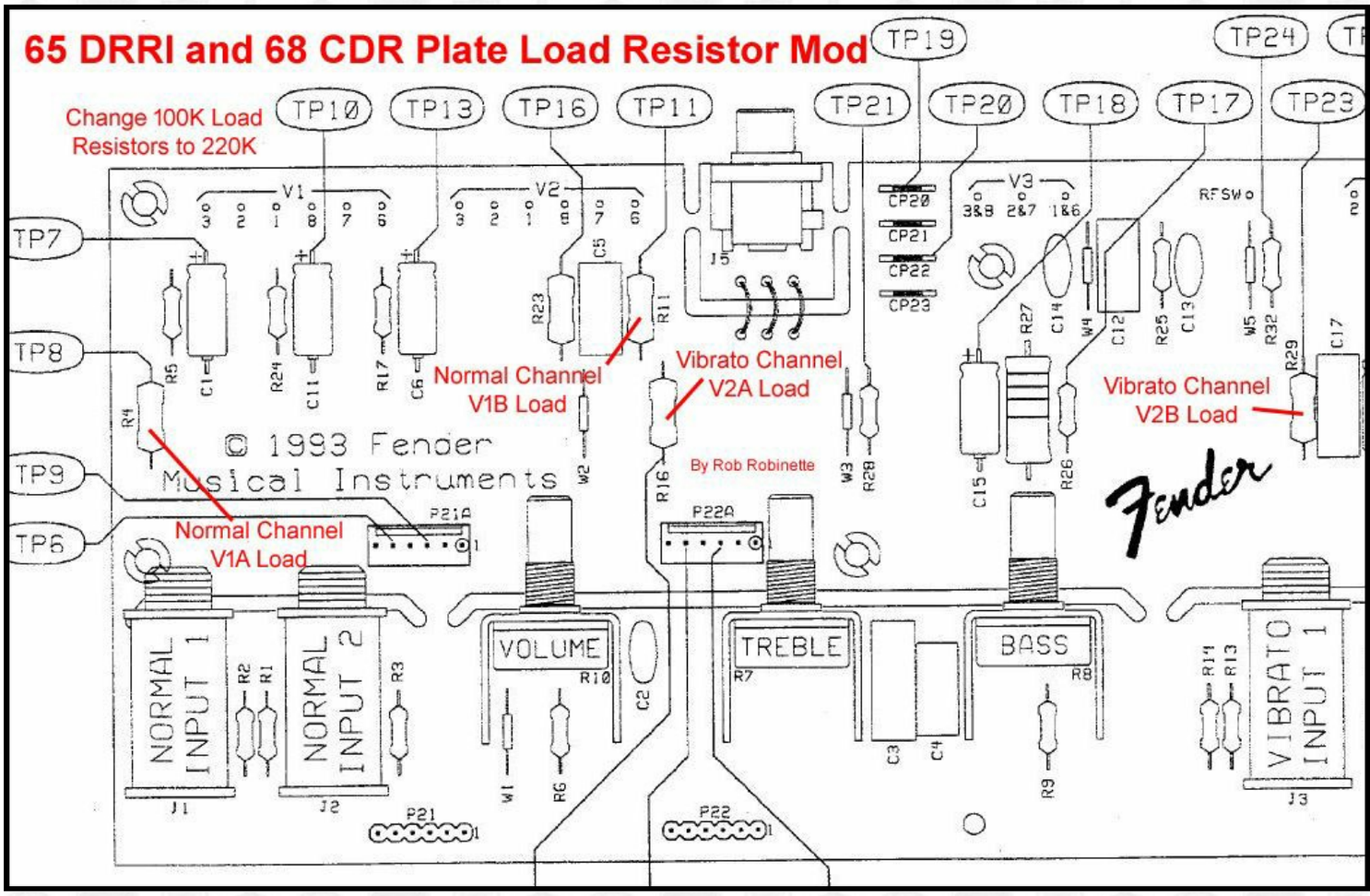
I like to do this to just one channel so consider changing the Normal Channel's V1A and/or V1B plate load resistor. I prefer modifying the Normal Channel first gain stage (V1A) plate load resistor with a 220k 1 watt first. **I use this mod in the Lead Channel Mod above.**



Second Preamp First Preamp
Vibrato Channel

Second Preamp First Preamp
Normal Channel

Swap 100K for 220K 1 Watt Resistors



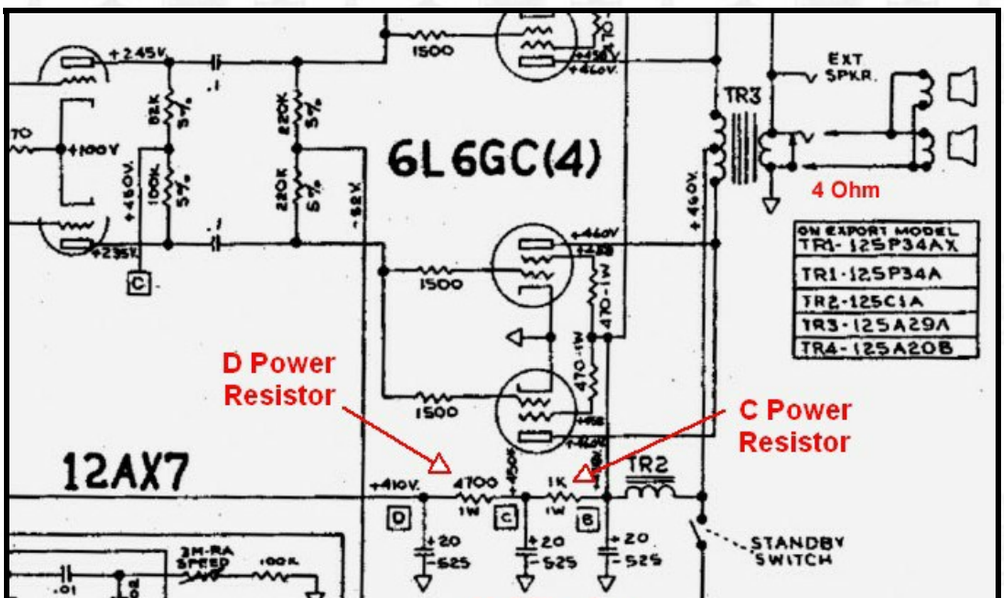
For the 65 Deluxe Reverb Reissue & 68 Custom Deluxe Reverb *you would change out V1A Load resistor R4, V1B R11, V2A R16, V2B R29. The circuit board has these parts labeled.*

Boost Preamp Voltage

The *Deluxe, Deluxe Reverb, Vibrolux* and *Tremolux* amps run with low voltage preamps compared to the other AB763 amps. The schematic for the *Deluxe* shows only 170 idle volts on the preamp tube plates while the *Twin Reverb* shows 270v. **You can add whole-amp gain and distortion by changing the two power (voltage dropping) resistors to the *Twin Reverb* values which will bump up the phase inverter and preamp plate voltage**. This mod will give you earlier and more preamp and power amp distortion (which might actually be too much for the 6V6 power tubes in the *Deluxe* and *Deluxe Reverb)*. This is an excellent mod for people that want to run 6L6 power tubes in their 6V6 amps. The extra voltage swing will drive the 6L6 harder into distortion and keep the upgraded amp from sounding too sterile.

The high preamp voltage AB763 amps like the *Twin Reverb* use a 1k 1 watt "C" power node power resistor and 4.7k 1 watt "D" power resistor.

C and D Power Resistors in the Twin Reverb



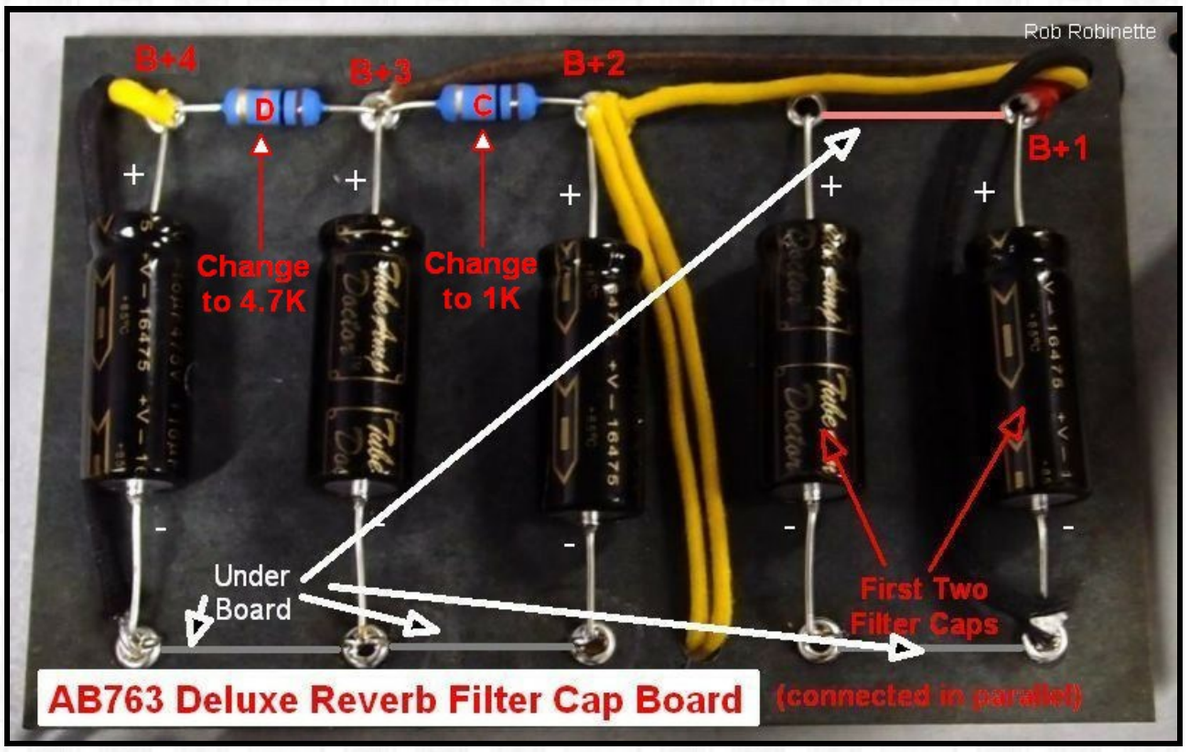
In the Twin Reverb *the C Power Resistor is a 1k 1 watt resistor. The D resistor is a 4.7k 1 watt.*

I recommend you start by modifying just the C power node power resistor first and sample the modified tone. **Reducing the value of the C power resistor will raise the voltage on all the tube plates except the power tubes. Replace the C power resistor with a 1k 3 watt.** I recommend a 3 watt rating for these resistors for longevity's sake. **The C and D power resistors are located in the "doghouse" which is located outside the chassis next to the output transformer**.

You don't have to use a 1k resistor here, you can chose any resistor value between the original value and 1k to tweak the tone change to your liking.

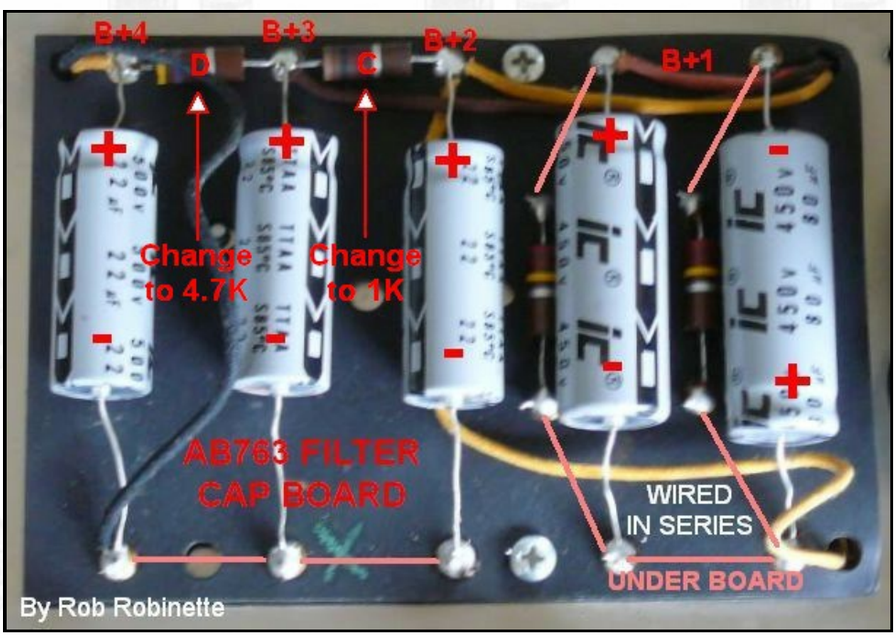
If you like the change and want more then replace the D power resistor with a 4.7k 3 watt which will boost only the preamp voltage (and reverb recovery in the reverb amps). Again, you don't have to use a 4.7k resistor here, you can chose any resistor value between the original value and 4.7k.

Deluxe Reverb Power Resistors



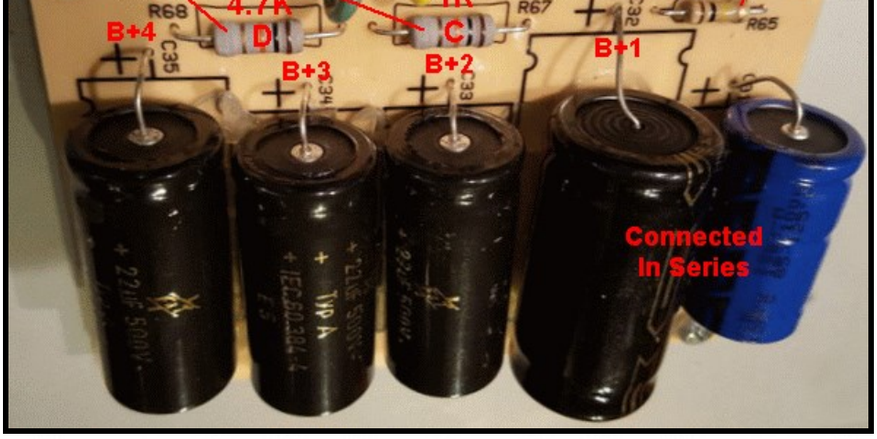
The C and D power resistors are located at upper left in the filter cap "doghouse."

Vibrolux & Tremolux Power Resistors



The C and D power resistors are located at upper left in the filter cap "doghouse."

65 DRRI & 68 CDR Power Resistors



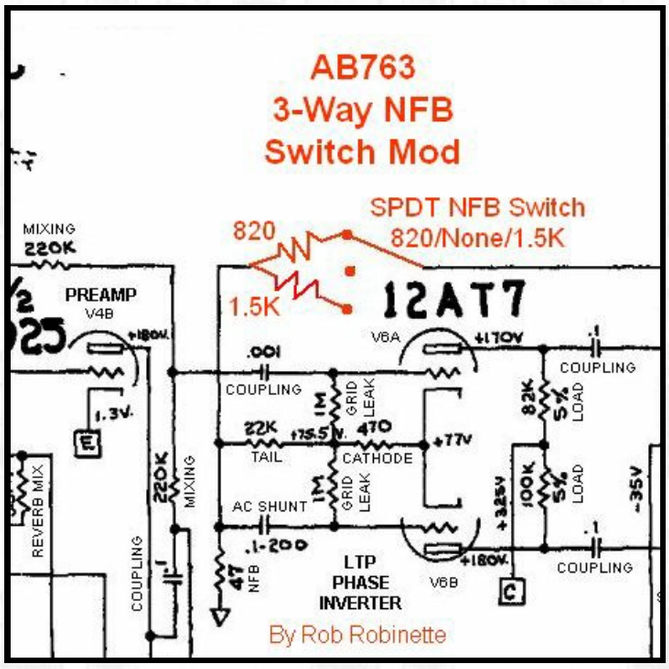
The C and D power (voltage dropping) resistors are located at upper-center left in the filter cap "doghouse."

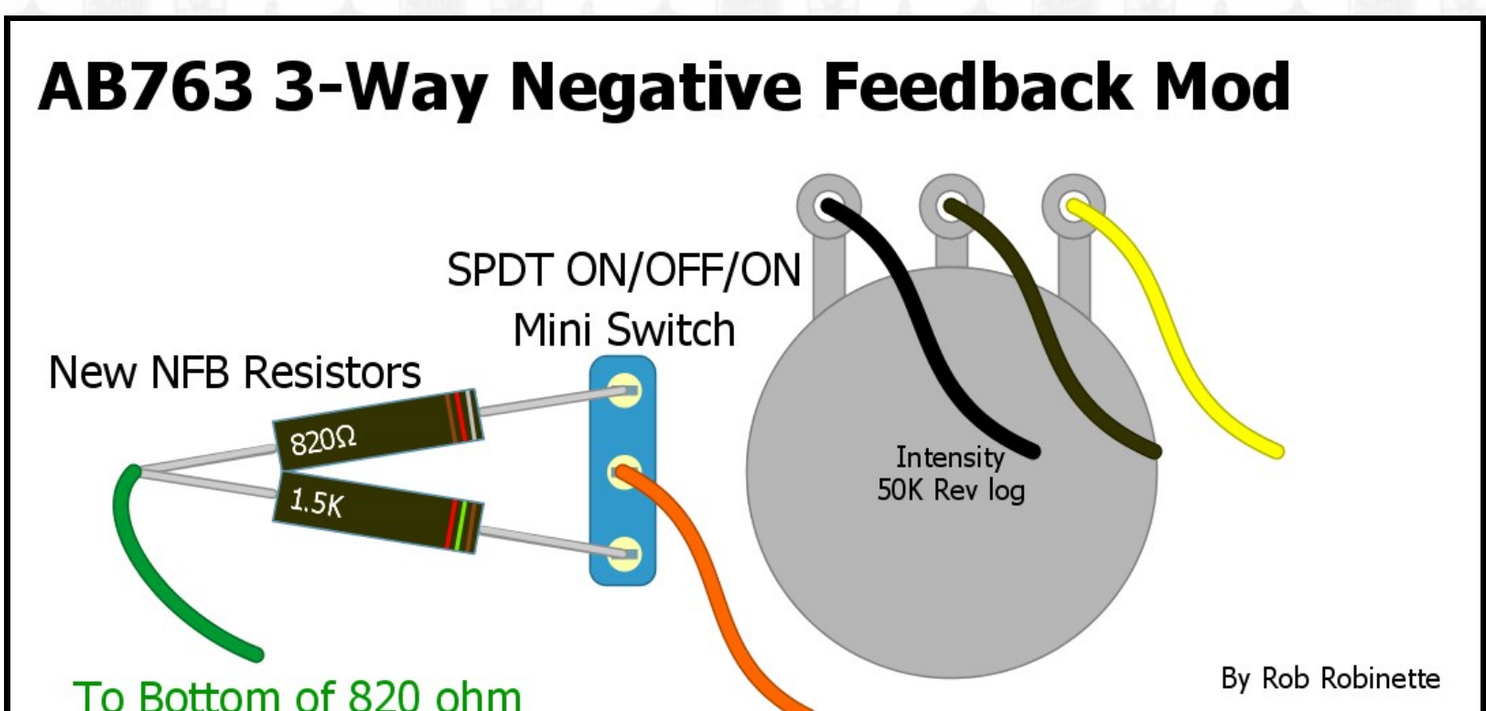
3-Way Negative Feedback Switch

The AB763 uses a crap ton of negative feedback which is the main reason the amp stays so clean until very high volume. It uses an 820 ohm negative feedback (NFB) resistor to control the level of feedback. **The reissue *68 Custom Deluxe Reverb* cuts NFB in half by using a double size 1.5k NFB resistor**.

I like to use a 3-way ON/OFF/ON SPDT mini switch to give you: Normal/None/Light negative feedback (AB763 820 ohm/5E3 Deluxe disconnected/*68 CDR* 1.5k). The center disconnected setting gives you a 5E3 *Deluxe* kind of vibe with early dirt and a lazy transition from clean to distortion. Feel free to tweak the resistor values, you may like even less NFB than the *68 CDR's* 1.5k resistor so try a 2.2k resistor instead.

The NFB switch fundamentally changes the clean and overdrive tone of the amp. Playability and touch sensitivity are also changed in all three positions. **This is a great modification and will really make the amp more versatile.**





To Bottom of 820 ohm NFB Resistor On the Circuit Board

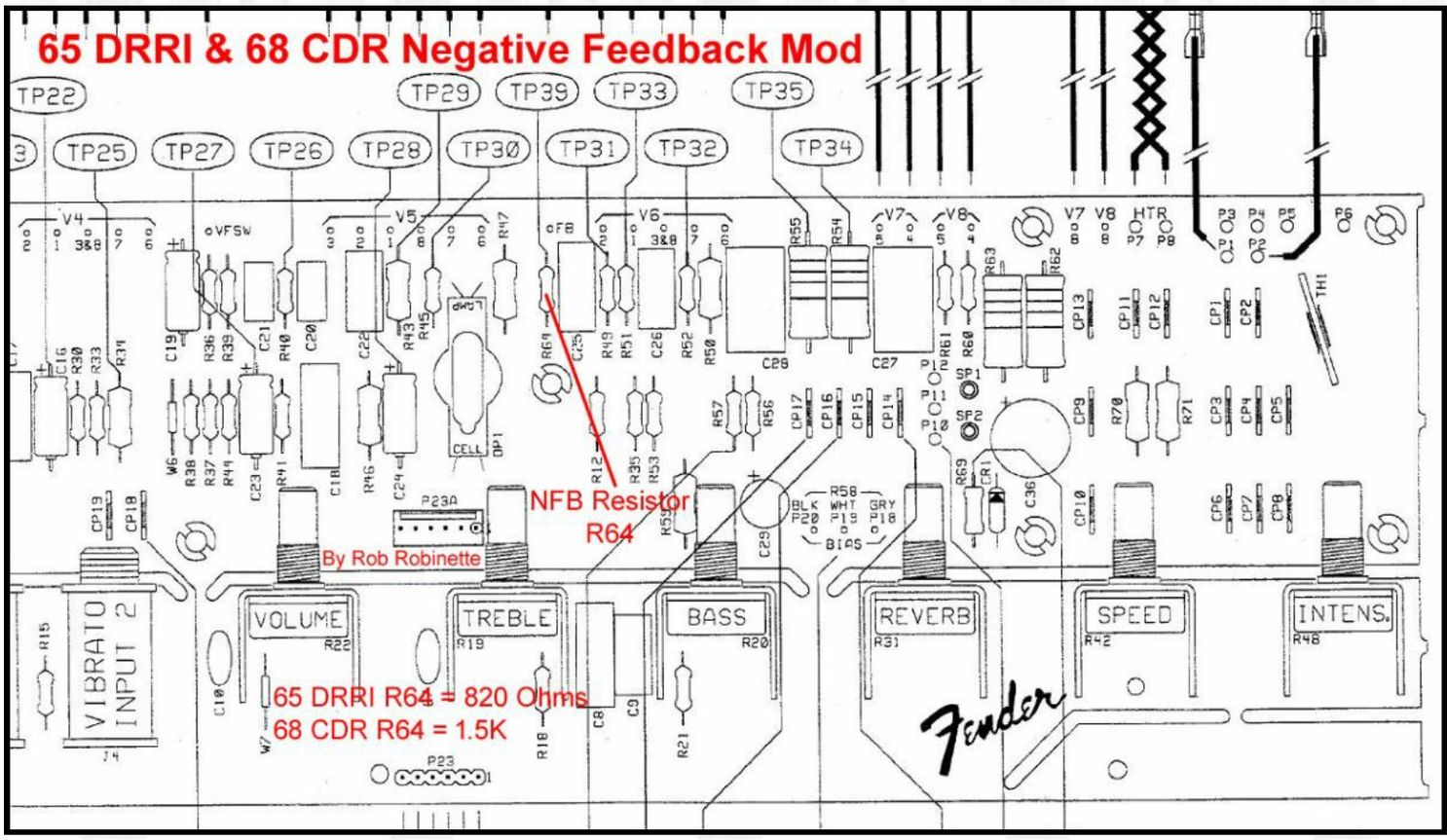
To Top of 820 ohm NFB Resistor On the Circuit Board

Clip or remove the 820 ohm NFB resistor on the circuit board

Switch Down = Normal / Center = No NFB / Up = 50% of Normal NFB

I suggest installing the SPDT ON/OFF/ON mini switch next to the tremolo intensity pot or on the back panel. Switch Down = Normal AB763 NFB, Center = No NFB, Up = 68 CDR NFB.

You must remove (or just clip a leg of) the original 820 ohm negative feedback resistor then connect the 3-way switch to the top and bottom resistor eyelets/turrets.



For the 65 Deluxe Reverb Reissue & 68 Custom Deluxe Reverb *the negative feedback resistor is R64. It is 820 ohms for the '65 and 1.5k for the '68. The circuit board has this part labeled.*

Master Volume Mod

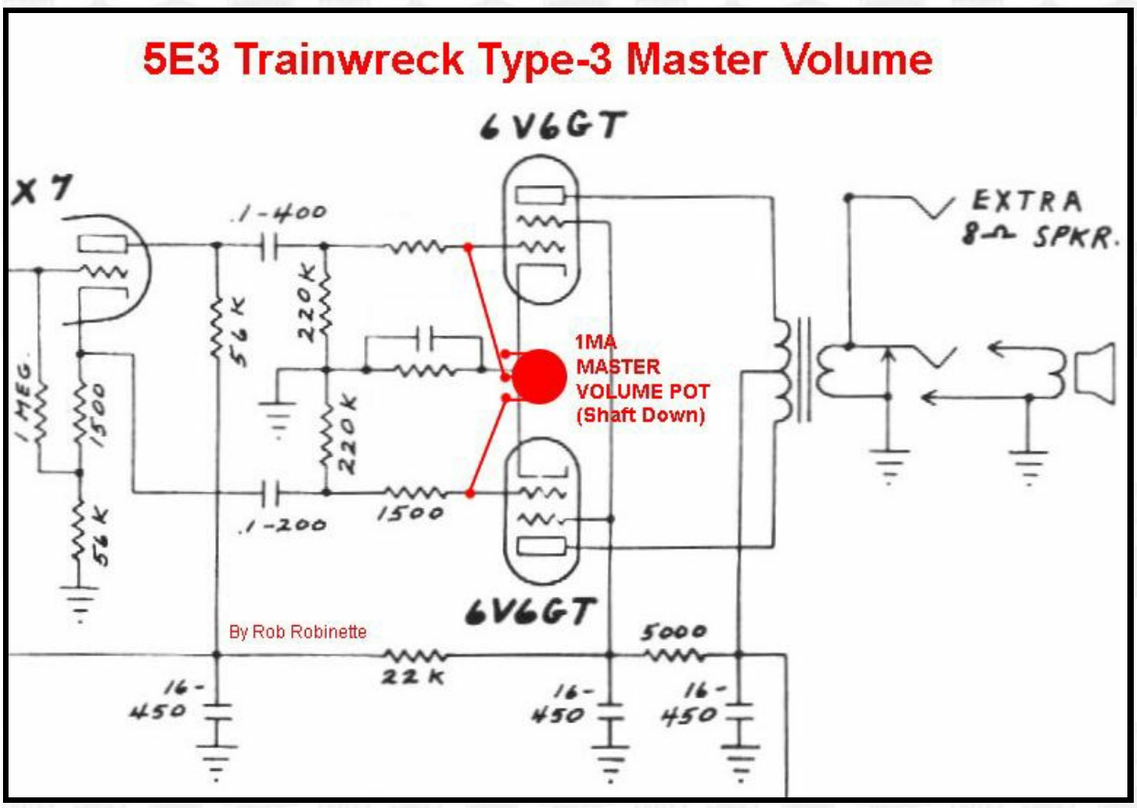
There are many master volume options but the Trainwreck Type-3 Post Phase Inverter Master Volume (PPIMV) is very easy to install and it works as well as any other master volume I've tried in any of my amps. This master volume controls the signal level feeding the power tubes so you can use it for lower volume distortion and to control

the balance between preamp and power tube distortion. It works by mixing the two phase inverter output streams together and they cancel each other out. Less resistance = more signal mix and less output volume.

For the Type-3 master volume you simply add a 1 mega ohm audio (log) pot and two wires. **It's easy to temporarily alligator clip the pot into the circuit to give it a try.** When the Master Volume pot is set to max the master volume circuit virtually disappears and will not color the amp's tone.

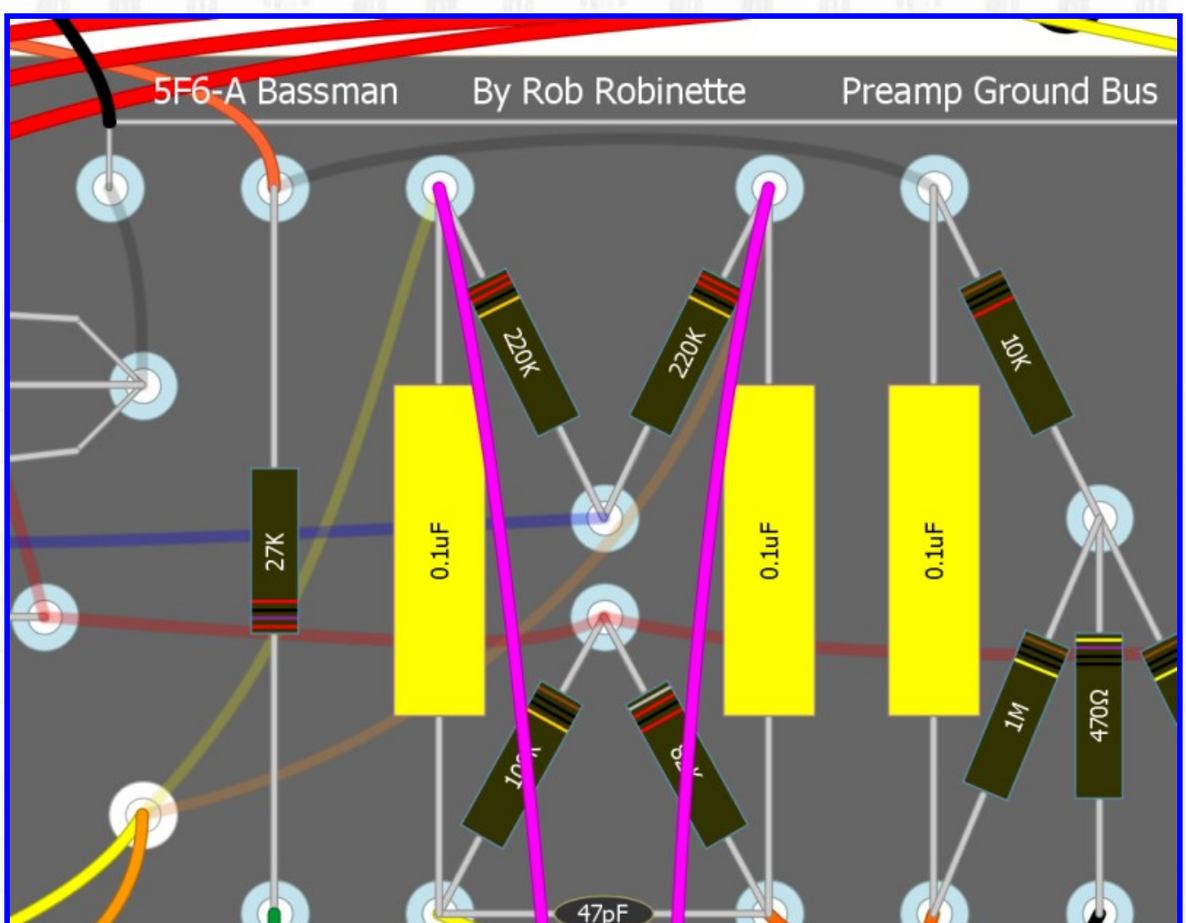
You can place your master volume pot anywhere but **you may have to use shielded wire to prevent noise or oscillation**. I use RG-174 when I need shielded coax in an amp. Only ground one end of any coax cable in an amp, preferably the signal input end, to keep from forming a ground loop. If you keep the wire runs relatively short and away from the power transformer end of the amp you should be OK without using shielded coax.

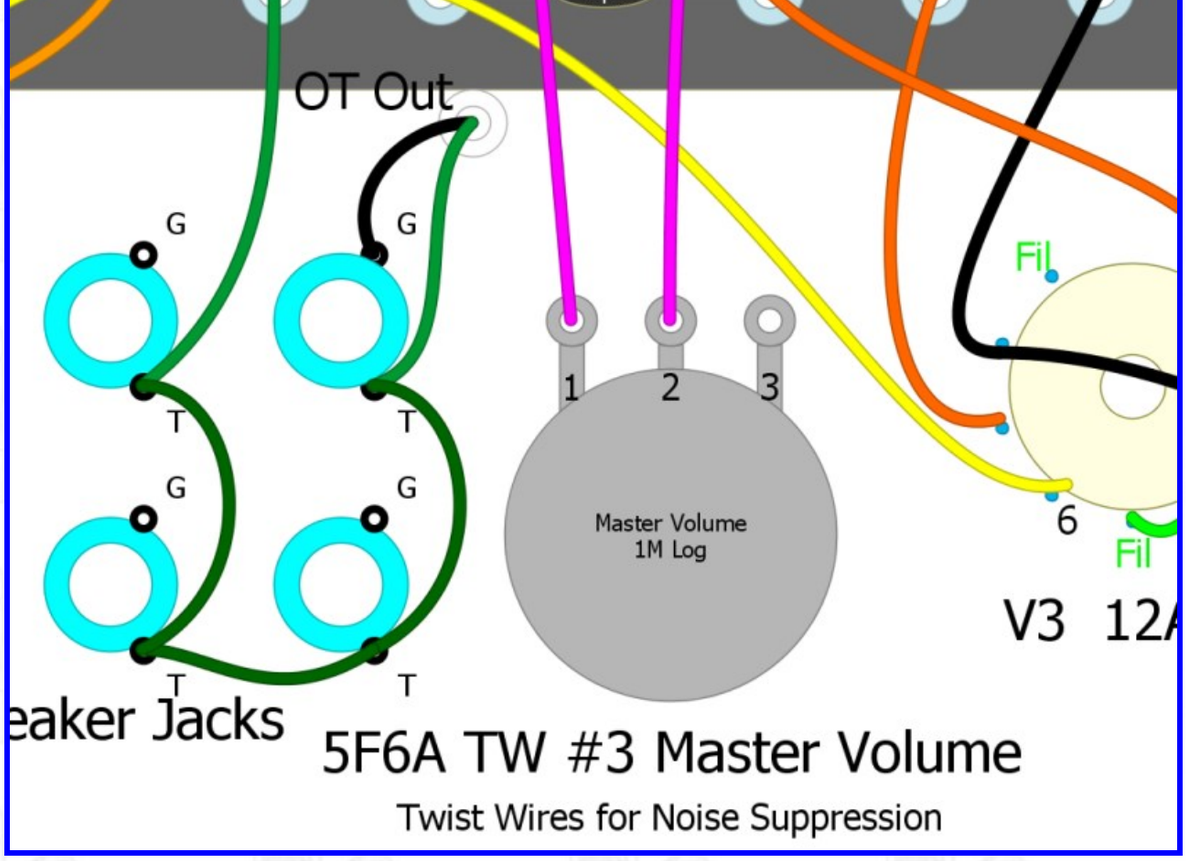
Simple But Effective Trainwreck Type-3 Post Phase Inverter Master Volume (PPIMV)



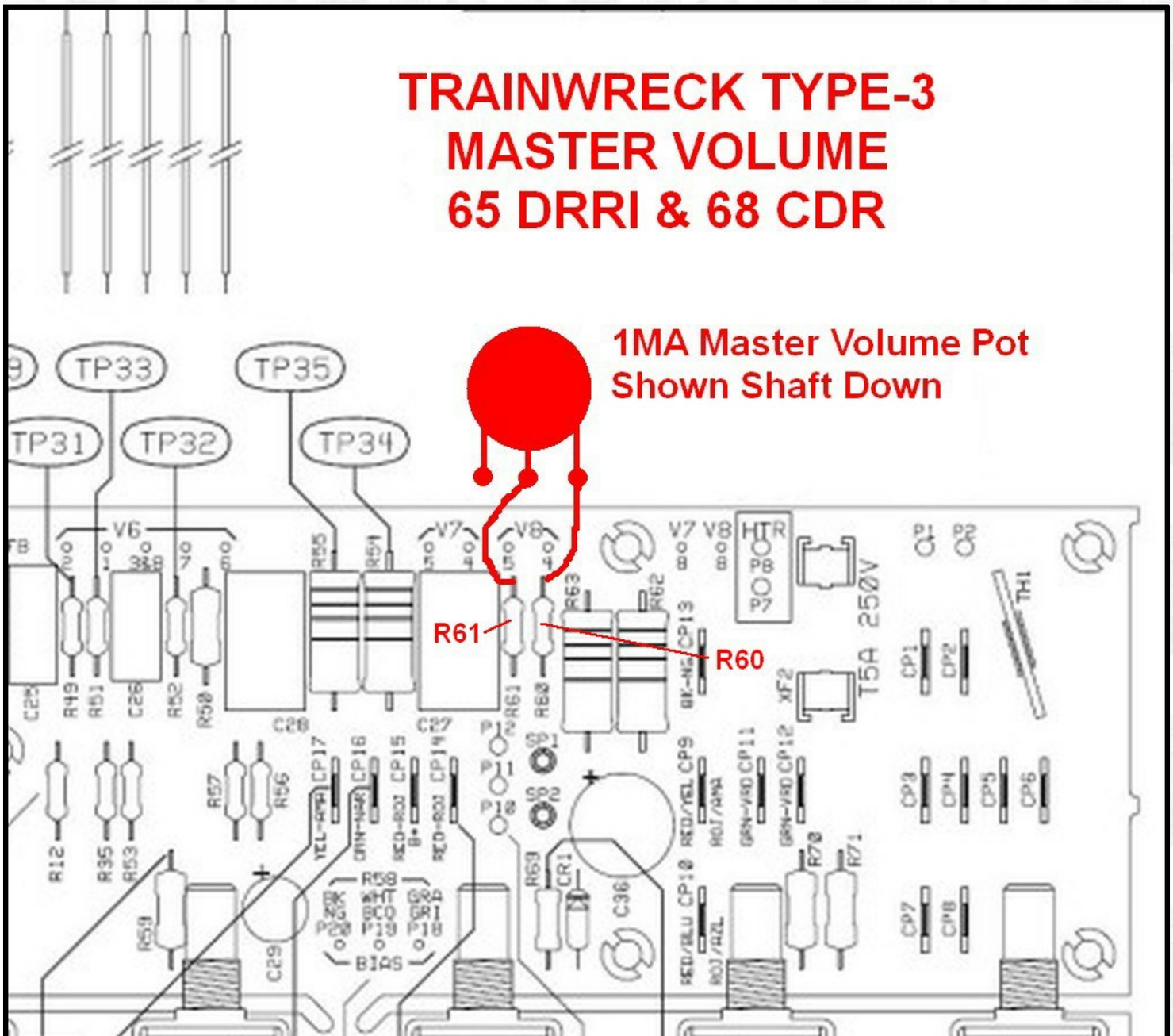
Add a 1 megaohm audio (log) pot and two wires and you've got an effective post phase inverter Master Volume. As you turn the Master Volume pot down (counterclockwise, pot is shown shaft down) more of the opposite phase signals from the phase inverter are mixed together which cancels the signal out. It's a good idea to twist the two wires to the pot to minimize noise (not shown in diagram). I did this mod to my 5F6A Bassman and it works great.

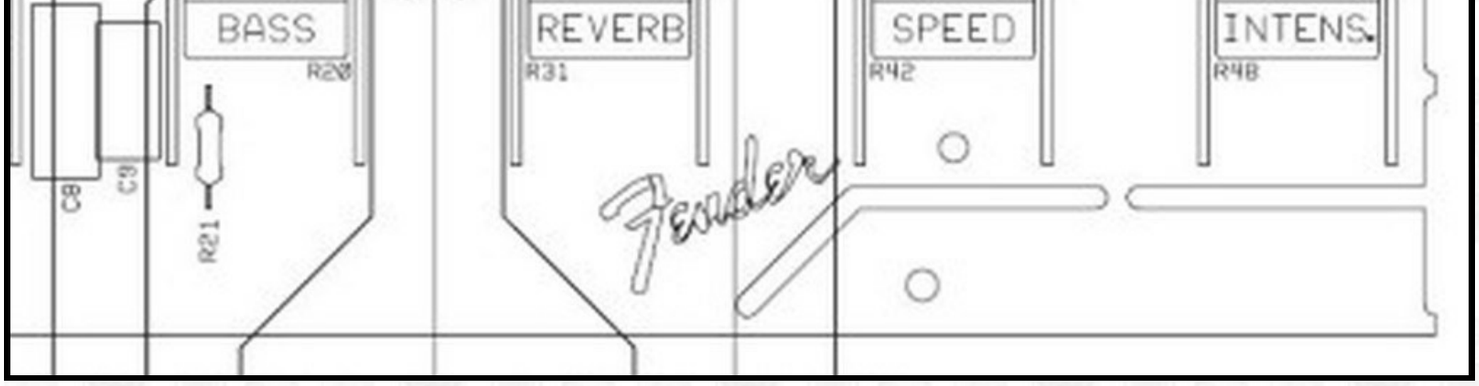
5F6A Trainwreck Type-3 Post Phase Inverter Master Volume (PPIMV)





Add a 1 megaohm audio (log) pot and two wires and you've got an effective post phase inverter Master Volume. As you turn the Master Volume pot down (counterclockwise) more of the opposite phase signals from the phase inverter are mixed together which cancels the signal out. It's a good idea to twist the two wires together to the pot to minimize noise (twist not shown in diagram above). The pot is shown shaft down in the layout. The layout shows a 5F6A Bassman but the connection is the same at the 220k power tube grid leak resistors.

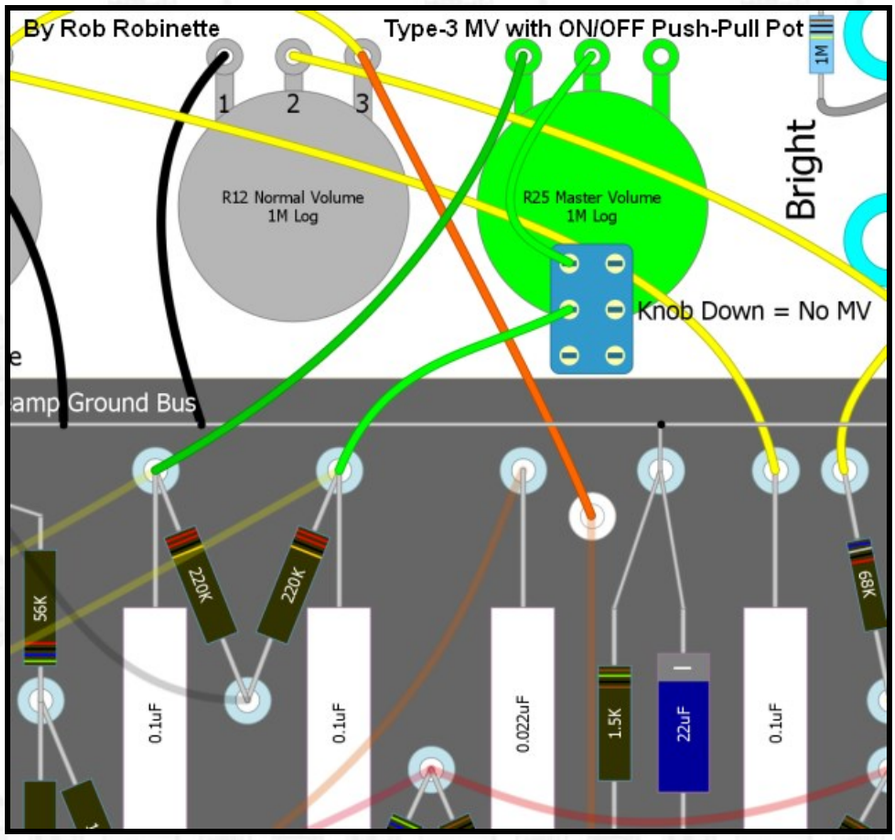




If you are anal **you can completely eliminate the Type-3 from the amp circuit by adding a switch to disconnect the circuit.** Use a 1MA pot with a push-pull DPDT switch and wire one leg of the master volume through the switch so when the master volume knob is down the circuit is completely disconnected. Pull the knob up to activate the master volume.

To do this you would run the wire from the #2 (center) pot terminal to the upper left DPDT switch terminal, then run a wire from the middle left DPDT switch terminal to the circuit board's right 220k resistor. The wire from the #1 (left) pot terminal would be wired as normal to the left 220k resistor (see layout below).

Type-3 With MV ON/OFF Push-Pull Pot

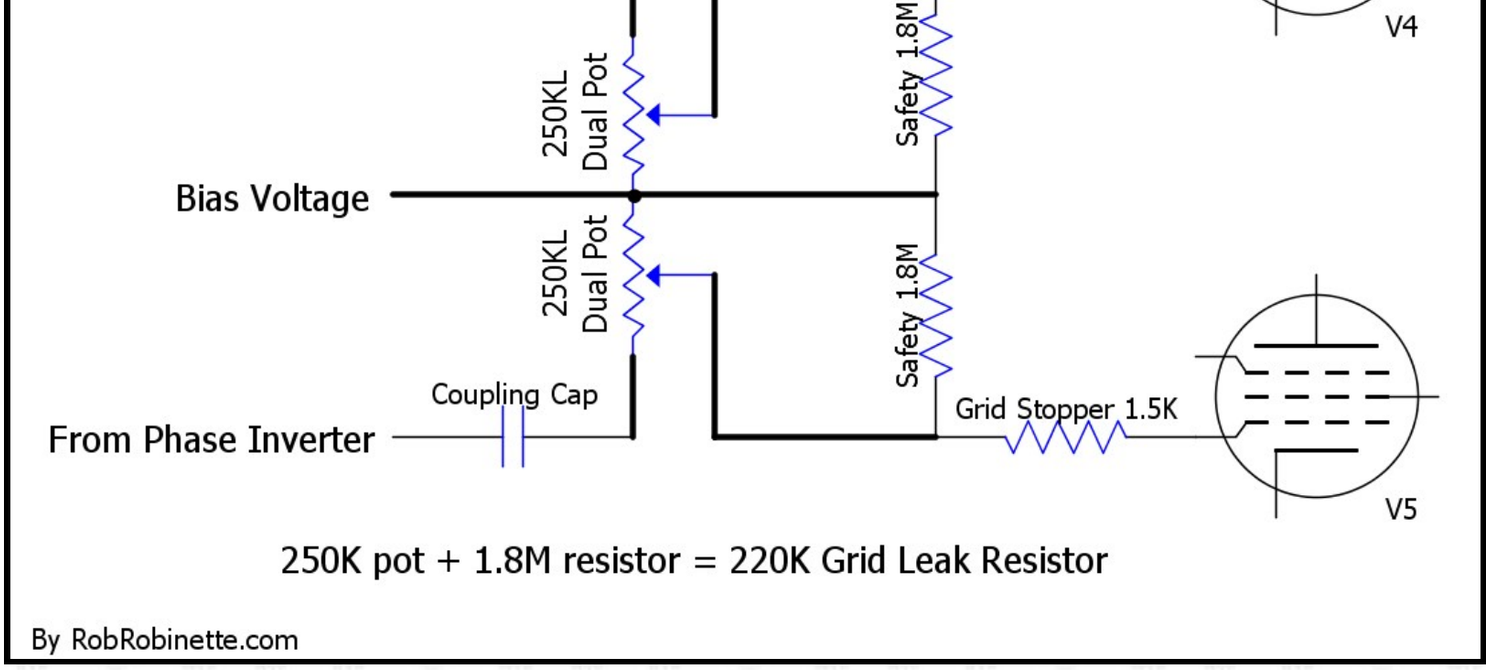


Master Volume knob Down = no master volume at all, Up = master volume on. This diagram shows a 5E3 Deluxe but the push-pull switch wiring is the same.

Another option is to use a switch and resistor for your master volume instead of a pot. You simply replace the master volume pot with a resistor on a switch. One guy used a 5k 1/2 watt resistor which gave him his preferred "bedroom practice" output level. Switch OFF = no master volume at all, ON = bedroom volume.

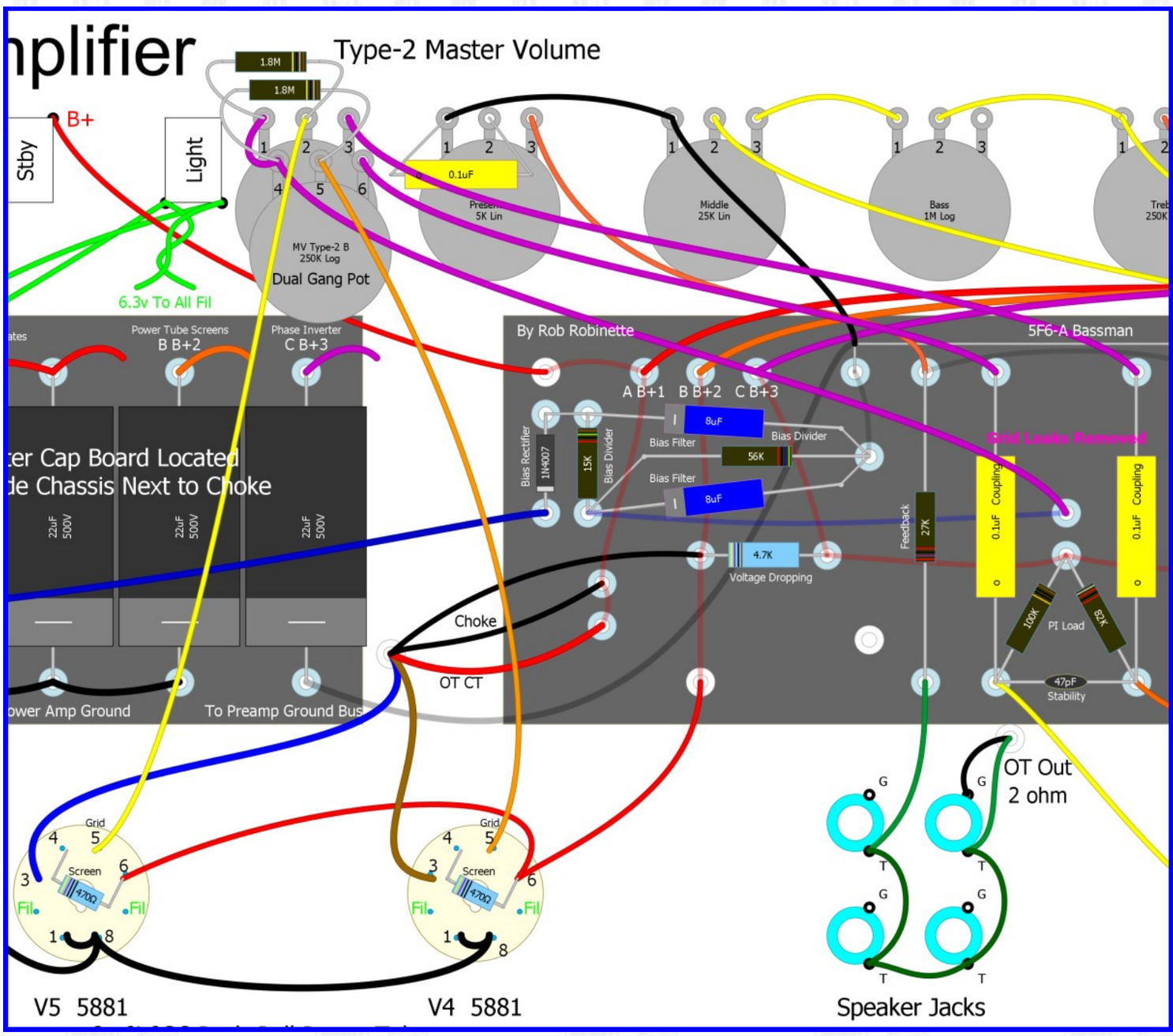
Trainwreck Type-2/Lar-Mar Master Volume

If you are building an AB763 amp then I recommend installing the Trainwreck Type-2 or Lar-Mar master volume. It is more "transparent" and virtually disappears when at max master volume setting. It is much more difficult to add to an existing amp so for modding an existing amp I recommend the Type-3 master volume.



When the master volume is turned down the guitar signal is bled to ground through the bias circuit. The 1.8M Safety resistors allow bias voltage to pass around the master volume pot in case of a wiper failure. The resistors also lower the max grid leak resistance to 220k to match the stock grid leak resistors.

Trainwreck Type-2/Lar-Mar Master Volume



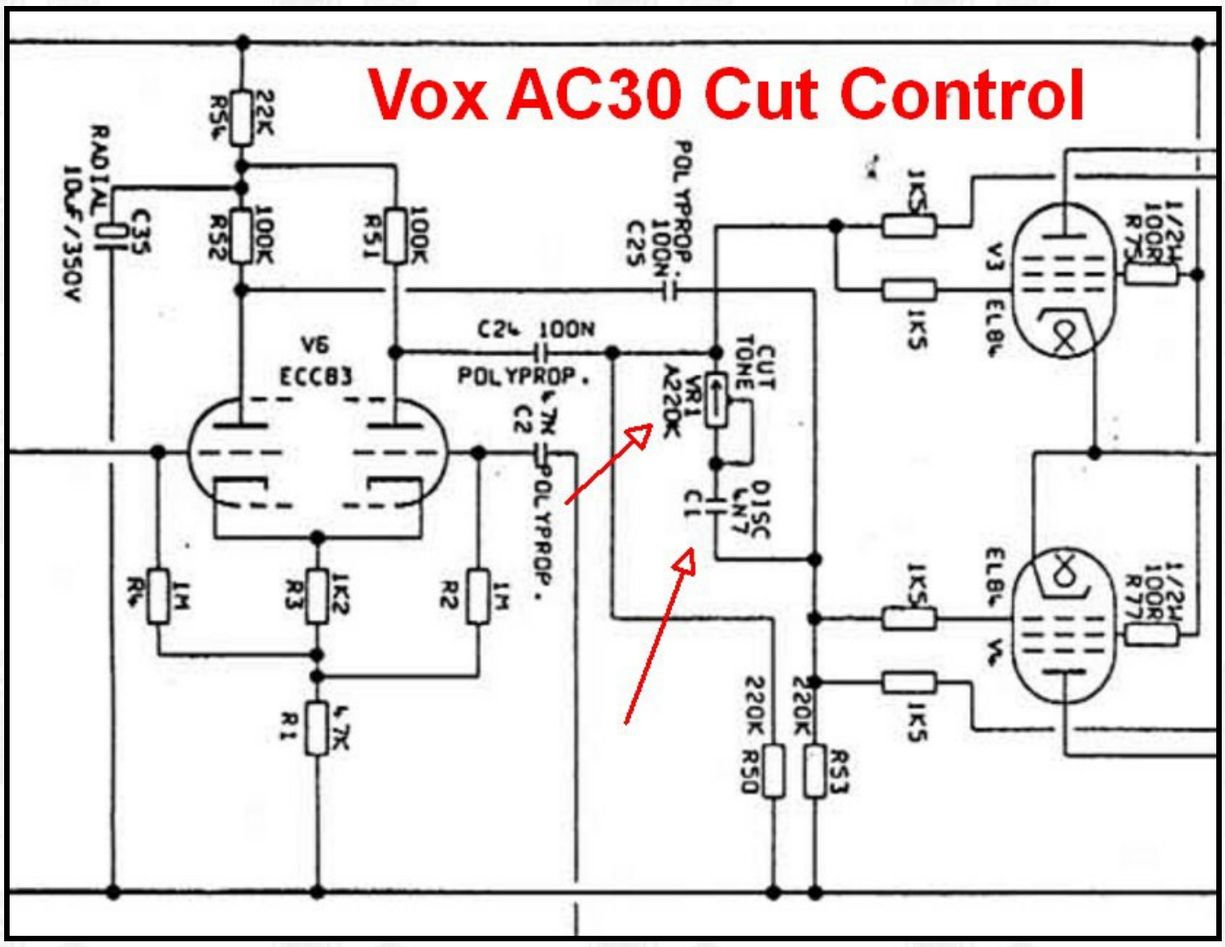
Type-2/Lar-Mar master volume shown on a 5F6A Bassman but the implementation is the same in AB763 amps. A dual gang 250KA pot (one shaft turns both pots, audio or log taper) replaces the two 220k power tube grid leak resistors. This is the most transparent of all the master volume types. The 1.8M resistors on the Master Volume pot reduce the pot resistance to 220k (the stock value) and add a failsafe path for bias voltage.

Vox Cut Control & Cut Control + Master Volume

The Vox Cut Control connects the two power tube grids with a 220k audio pot and 4.7nF (.0047uF) capacitor to allow variable high end cut. In a push-pull amp the guitar audio signals on the two power tube grids are 180 degrees out of phase with one another so mixing them together nullifies the signal, kind of like mixing matter and antimatter. **The capacitor limits the effect to high frequencies but if you jumper around the cap the pot becomes a Trainwreck Type-3 Master Volume**.

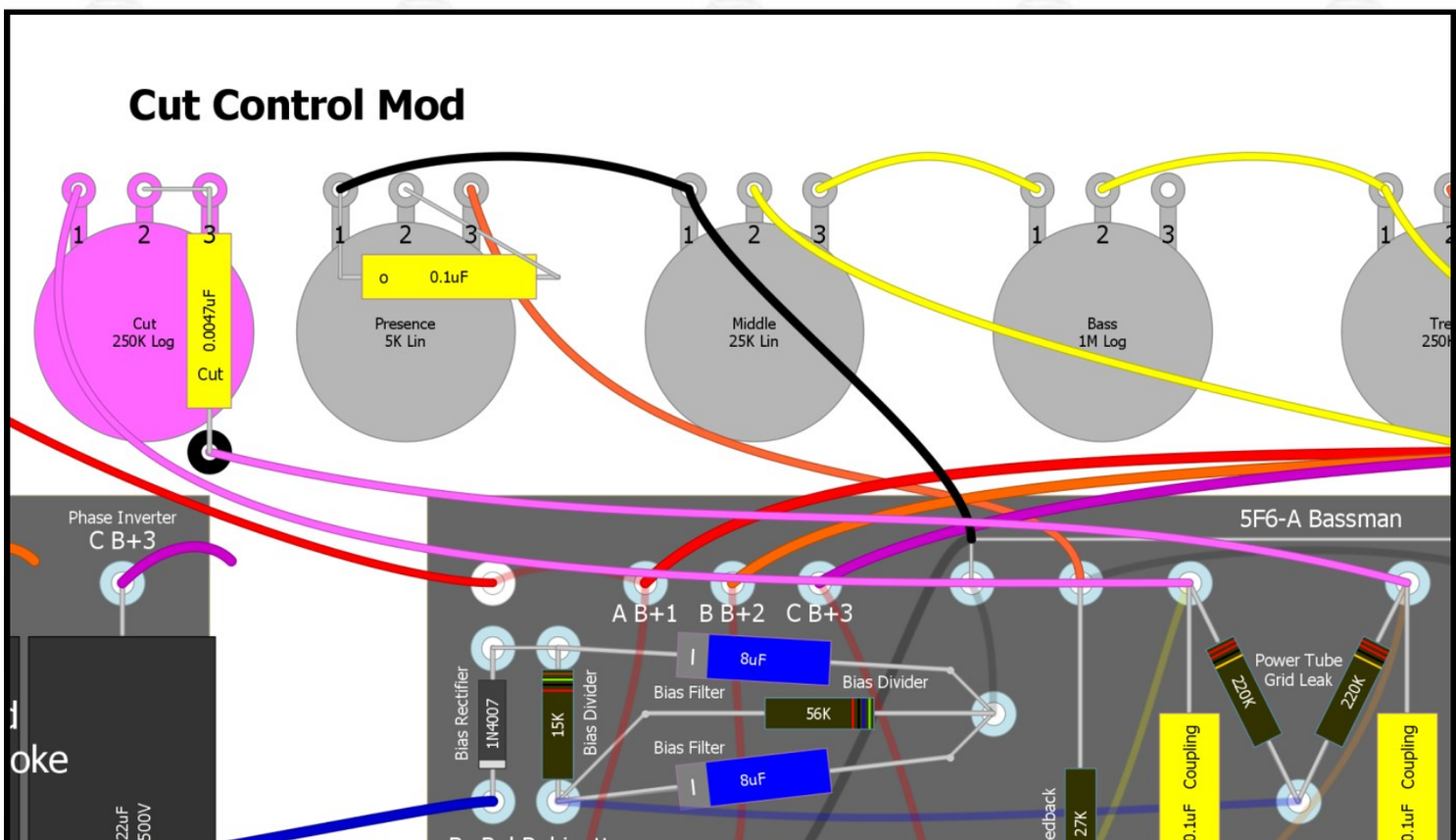
I'm a big fan of this very late tone tweak because it pairs well with an early tone control or stack. Use the early tone control to get the overdrive tone and ***substance*** you want then use the Cut Control to fine tune the tone. **The Cut Control affects only the power tubes**.

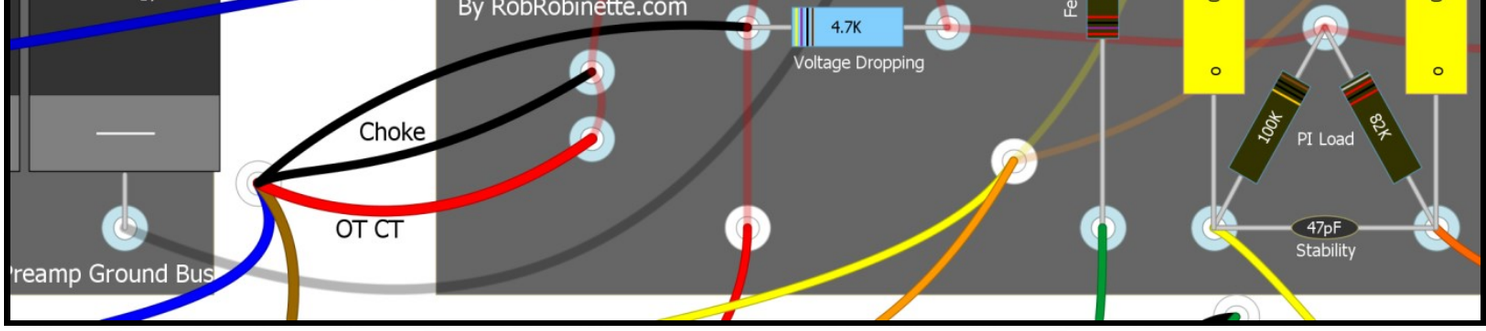
Wire the cut pot as a variable resistor so that as you turn the knob up (clockwise) resistance increases. Up = more resistance = brighter tone.



220KA or 250KA pot (audio pot wired as variable resistor) and .0047uF 200v cap connect the two phase inverter outputs.

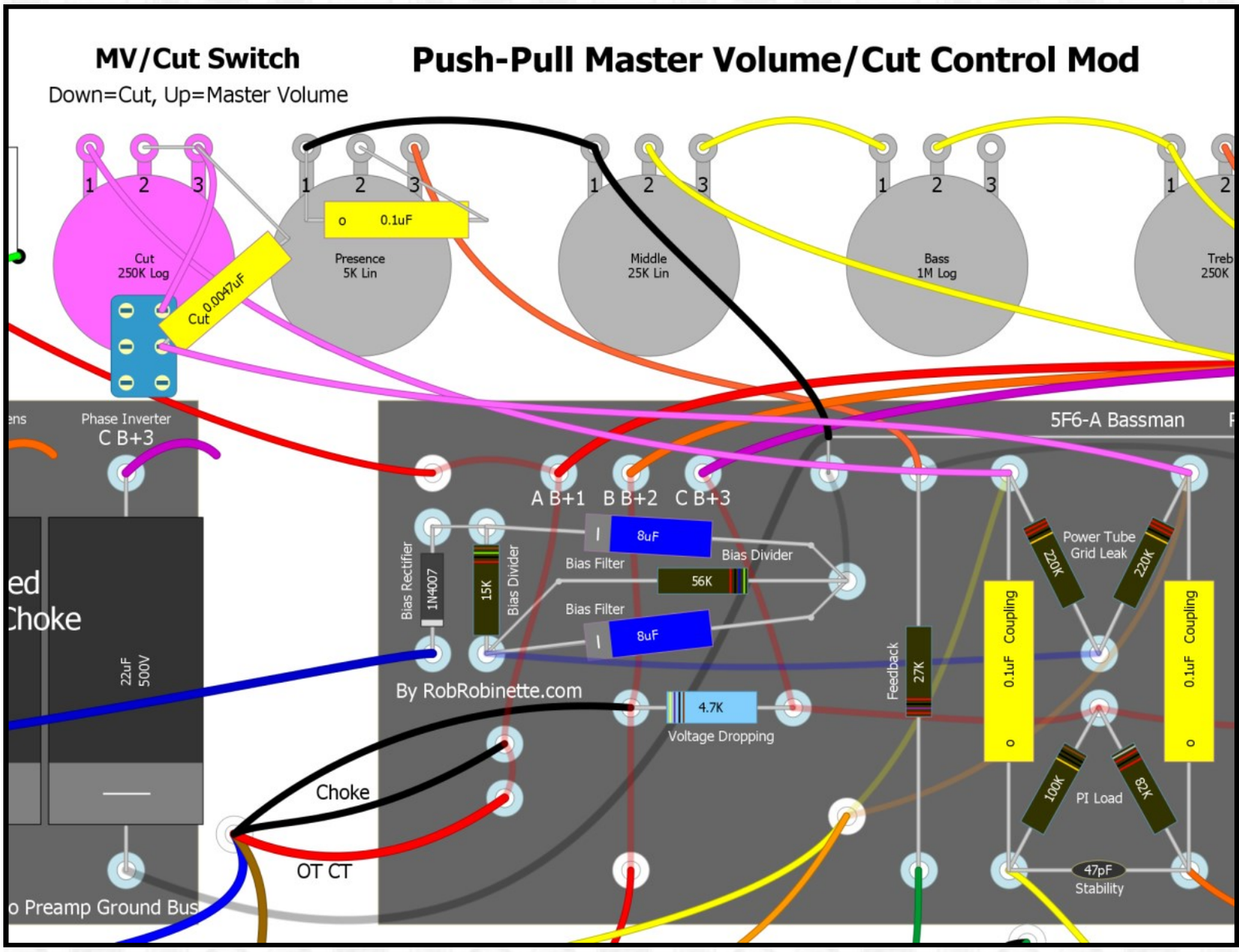
Cut Control on 5F6A Bassman





The Cut Control is shown on a 5F6A but the mod is identical on an AB763. The .0047uF Cut Cap can be supported by a non-grounded terminal strip.

Master Volume + Cut Control Push-Pull Pot Mod

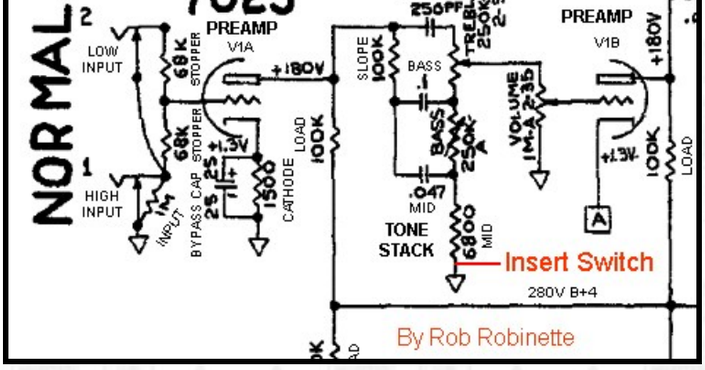


You can turn a Cut Control into a Trainwreck Type-3 Master Volume by simply jumpering around the Cut Cap*. Use a 250KA push-pull pot and you can push the pot down for Cut Control or pull it up for Master Volume. Connect the "cut capacitor" from pot terminal #3 to the middle switch terminal.*

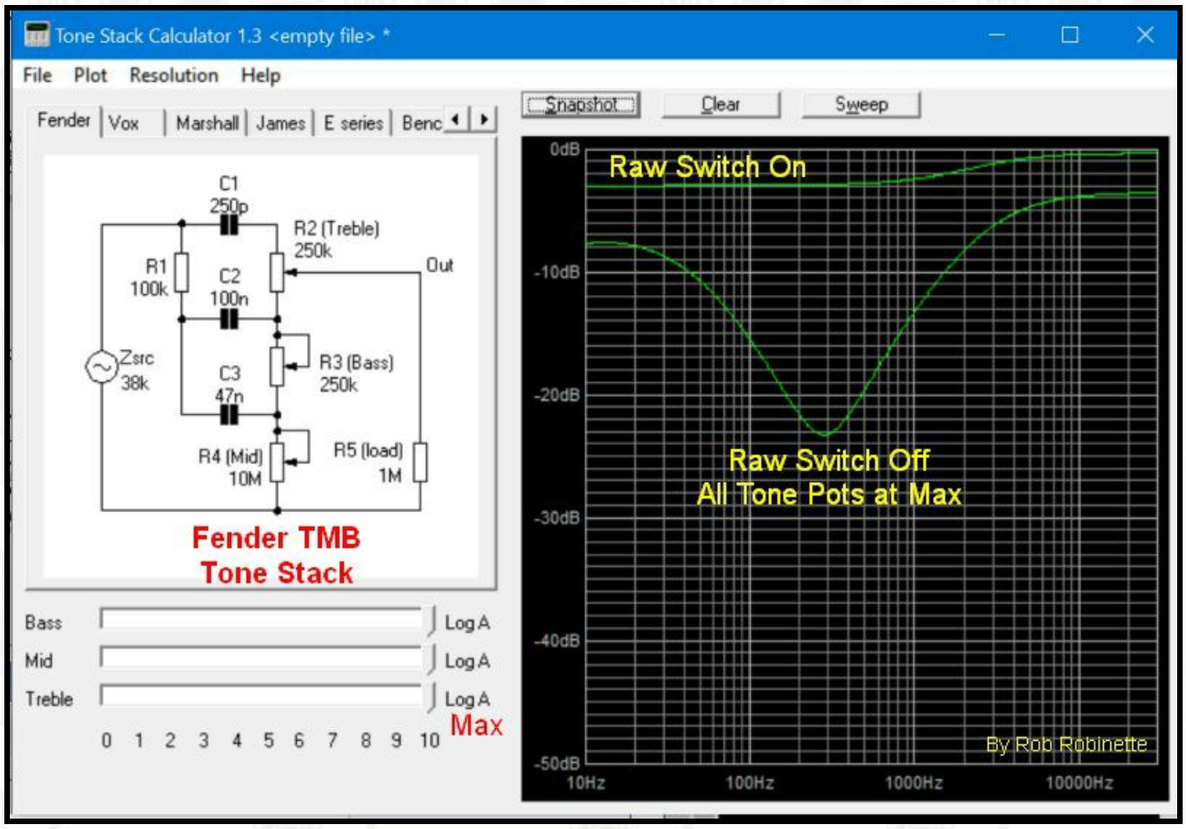
Raw Switch Mod

This is a great mod for pretty much any amp with a TMB (treble mid bass) tone stack. Because this type of tone stack really loads down the guitar signal being able to eliminate the tone stack is a valuable option. Just add an SPST ON/OFF mini-switch to the 6.8k Middle tone resistor's ground. **No ground = no tone stack** which gives you a very significant signal boost and pure "raw" unaltered tone. The raw tone has a non-scooped mid similar to the no-tone-stack tweed amps such as the 5E3 *Deluxe*. It also works great with EQ pedals because it lets the pedal do *all* the tone shaping.

If you feel the jump in gain is too much or the raw tone is too wooly you can reduce the raw boost effect by putting a resistor between the two raw switch terminals so when the switch opens for "raw tone" some tone stack current can still flow. Opening the raw switch will add the resistor value to the tone stack mid cap value. When the raw switch is in the normal, closed position the raw switch resistor is bypassed.

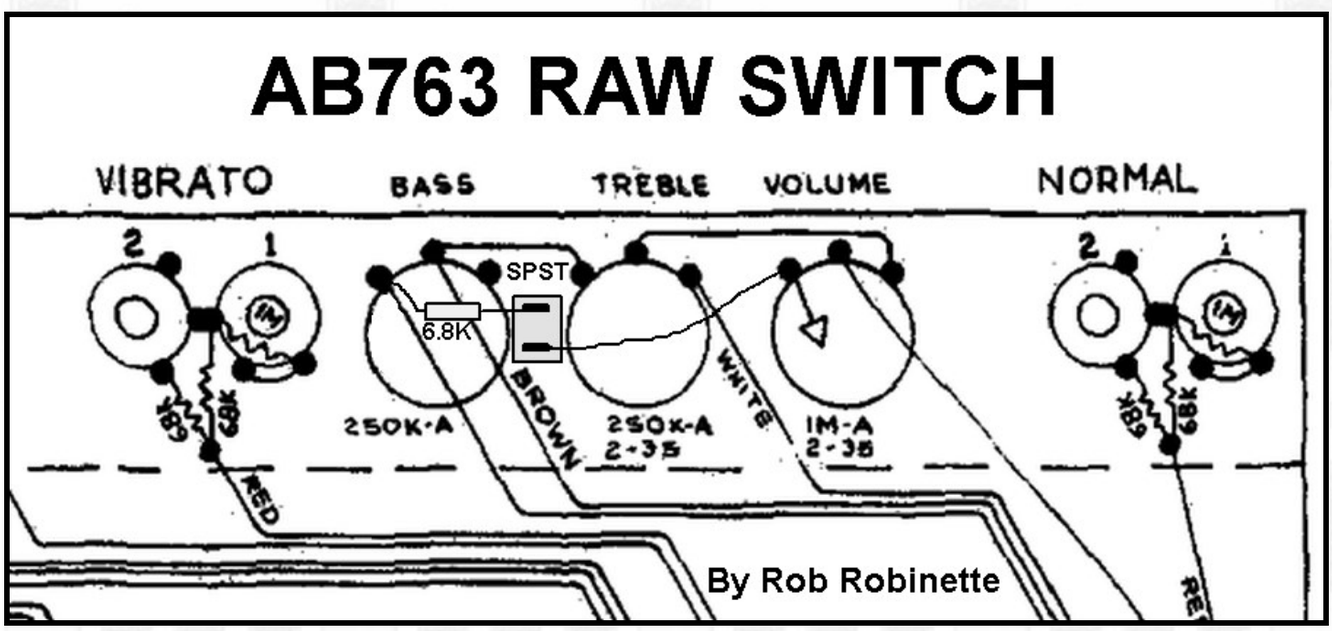


Raw Switch On and Off



You can see how even with all three tone pots at max what a huge boost in signal you get when the Raw Switch is engaged (tone stack ground disconnected). The mid scoop is also flattened out. Chart is from the [Duncan Tone Stack Calculator](#).

I placed my Raw mini-switch between the Treble and Bass pots.



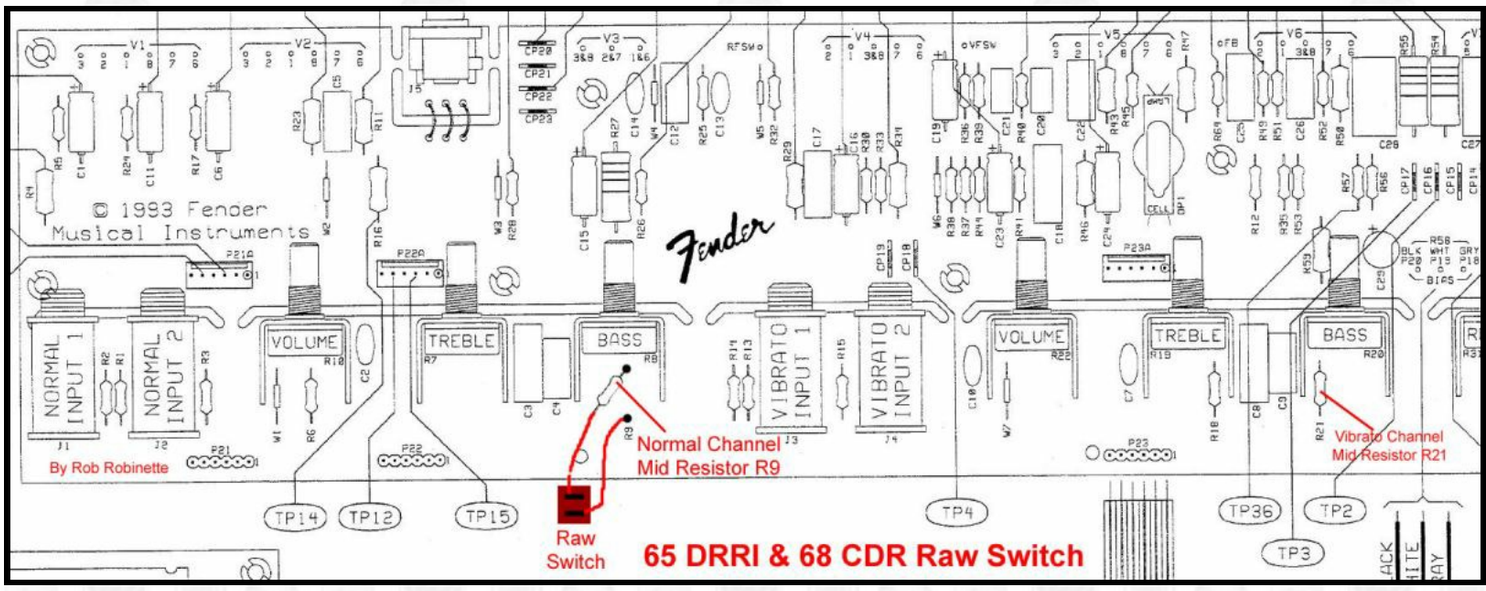
Raw switch added to AB763 Normal Channel. The switch is grounded at the Volume pot ground. The switch is a SPST (Single Post, Single Throw) ON/OFF mini-switch.

The 6.8k Mid resistors are located on both Bass pots. Just remove the resistor from the pot and connect the pot's left terminal to a Raw switch terminal with a new 6.8k 1/2 watt resistor (the leads of the original resistor won't be long enough to reach the switch). Connect the other switch terminal to ground and you're done.

With the switch in the connected position the tone stack is completely normal. With the switch in the disconnected

position the tone stack disappears from the circuit and you get a big, fat signal boost. I like to orient the switch so that down is normal (connected) and up is raw/boost (disconnected).

You can use a push-pull 1MA volume pot as the raw switch if you prefer not to drill a hole in your faceplate for a switch. Just replace the volume pot with a 1MA (1 meg audio) push-pull pot and connect the 6.8k Mid resistor to the center-left push-pull terminal and connect the ground to the bottom-left terminal. With the push-pull down you will have a normal tone stack. Pull the volume control up and you get raw/boost.



For the 65 Deluxe Reverb Reissue & 68 Custom Deluxe Reverb *the Mid tone resistors are Normal Channel R9, Vibrato Channel R21 (at far right). The circuit board has these parts labeled. The resistors are mounted next to the Bass tone pots. Disconnect one end of resistor R9 and bend it to one side. Connect the Raw switch to the free end of R9 and the empty R9 mounting pad.*

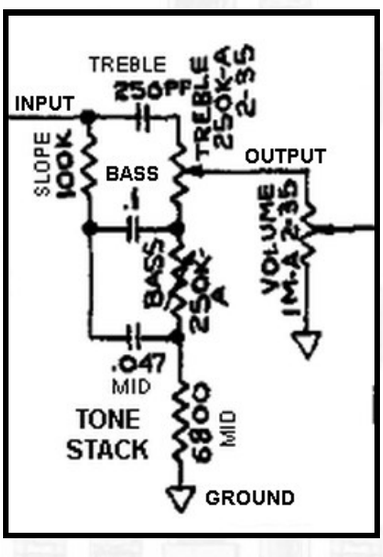
If your AB763 amp has a Mid tone pot then you don't need the 6.8k resistor at all. Just run the Mid pot's ground wire (on the left Mid pot terminal) to a Raw switch terminal and the other switch terminal to ground. The switch will now interrupt the tone stack's ground. Another option is to replace the 10KA (audio or log) Mid pot with a 25KA or even 100KA pot (I prefer the 100KA). When you turn the Mid knob higher it will act as a "Raw" control, boosting the signal and removing the mid scoop.

Tone Stack Mods

Since both channels' tone stacks are identical you might want to consider changing one to offer different tone shaping options.

The Tone Stack is a series of three RC (resistance capacitance) audio filters that block three bands of audio frequencies. The Treble and Bass pots change the resistance of the RC audio filters to change the amount of signal filtered out. The blackface tone stack is a passive filter so it cannot boost any frequency band, it can only remove parts of the guitar audio signal. Note the Treble pot is wired as a variable voltage divider (potentiometer) while the Bass pot is wired as a variable resistor (the input and wiper terminals are tied together). In AB763 amps with a Mid pot it is a 10KA (audio or log) wired as a variable resistor.

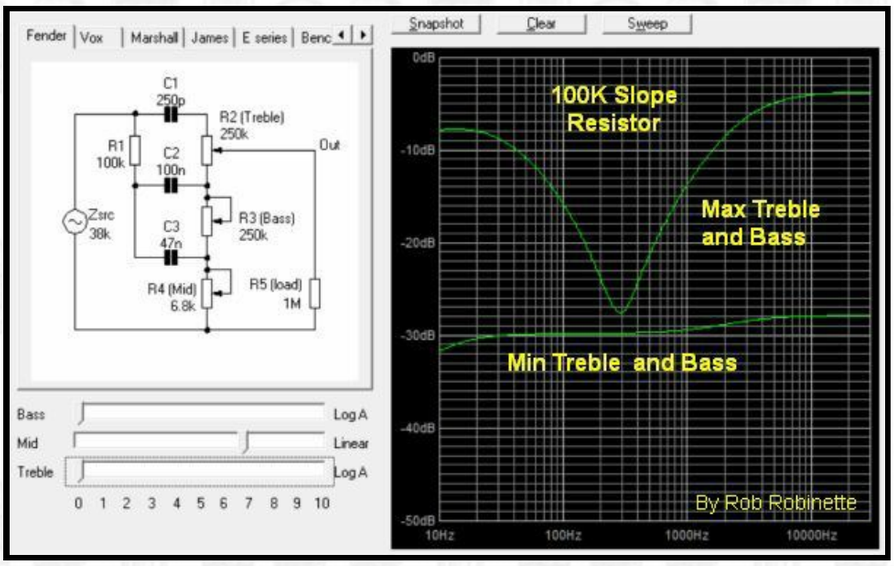
The AB763 Tone Stacks

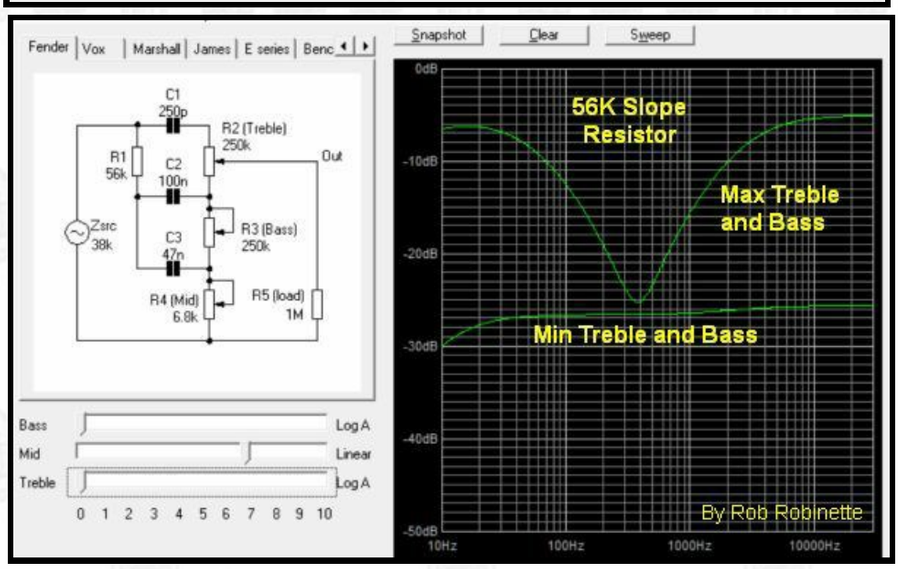


Both channels' tone stacks are identical. The stacks' output flows directly into the Volume pot.

A common mod is to replace the 100k Tone Slope (yes, that's where he got his name) resistor with a 56k or even

33k which changes the way the tone controls operate. Others prefer a 150k Tone Slope. Keep in mind a lower Tone Slope resistor will increase the load of the tone stack and reduce gain.



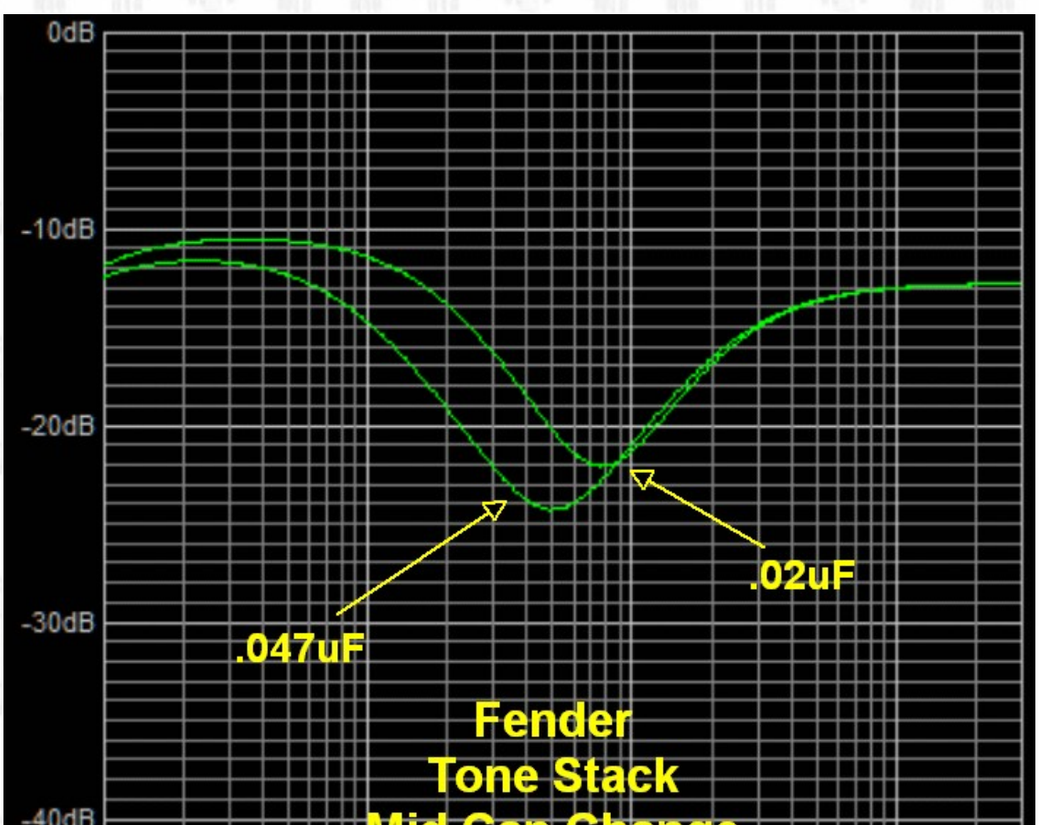


Standard 100k Tone Slope resistor on the left, 56k on the right. The effect is subtle but some prefer the 56k slope. ***Notice how the max bass and treble are balanced on the right with the 56k slope resistor. The 56k also boosts the midrange by 2.5dB. I'm a fan of the 56k tone slope resistor.***

Another common mod is replacing the Tone Stack's 250pF treble tone cap with a 500pF which will extend the treble controls reach into the mid frequencies.

The reissue *68 Custom Deluxe Reverb* uses a .02uF Mid cap instead of the AB763 standard .047uF. You can see the difference between the .047 and .02uF Mid cap in this chart:

Tone Stack Mid Cap Change

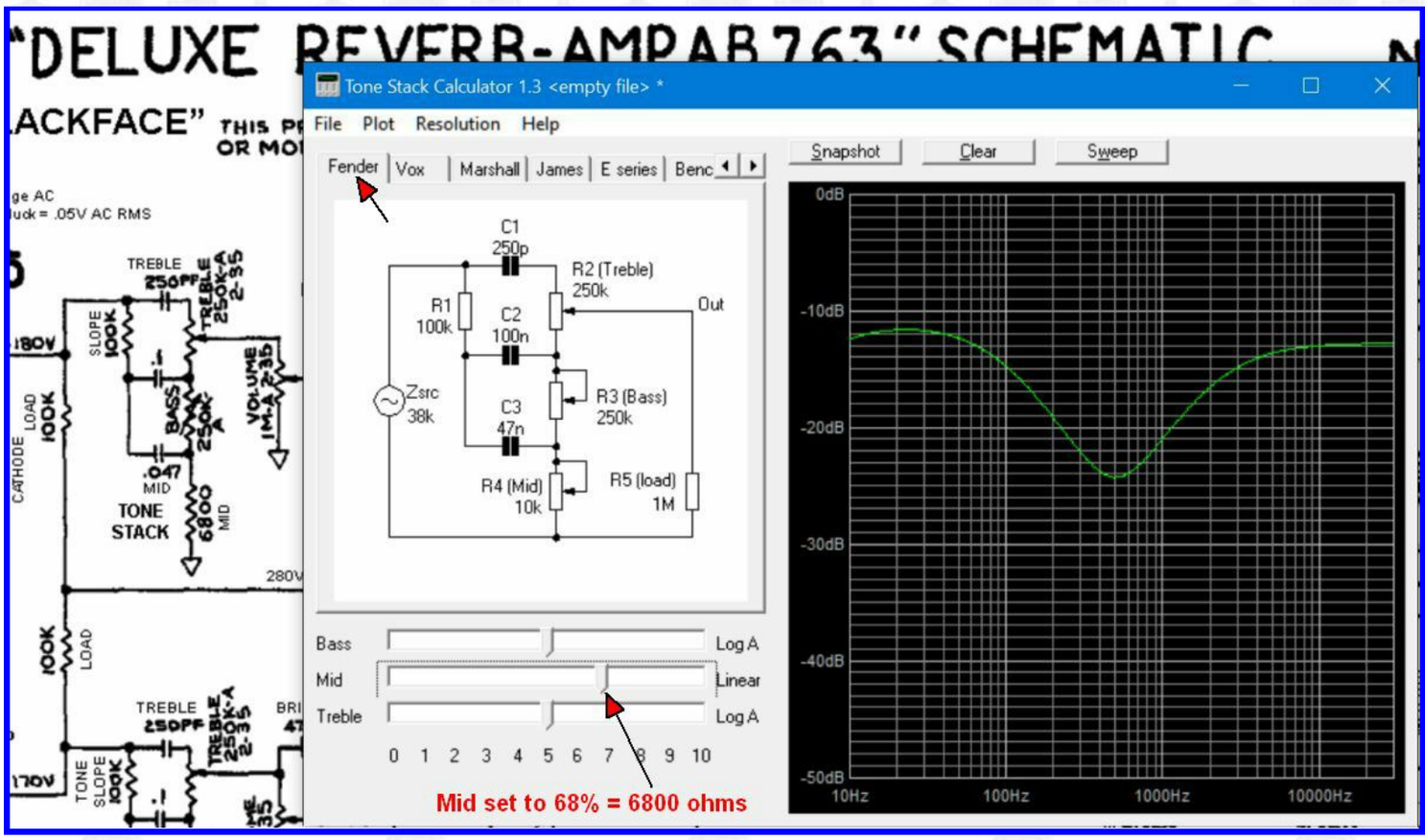


The Custom channel's reduced .02uF middle cap shifts the "mid" frequency band higher and reduces the mid scoop by over 2dB.

The *68 Custom Deluxe Reverb* also has an 18k resistor between the Bass pot and 6.8k Mid resistor. The 18k resistor works as a minimum bass setting and keeps the bass from falling off a cliff as you approach the Bass pot's minimum setting. It makes setting low bass settings easier and more precise but it does limit you to how low you can set the bass.

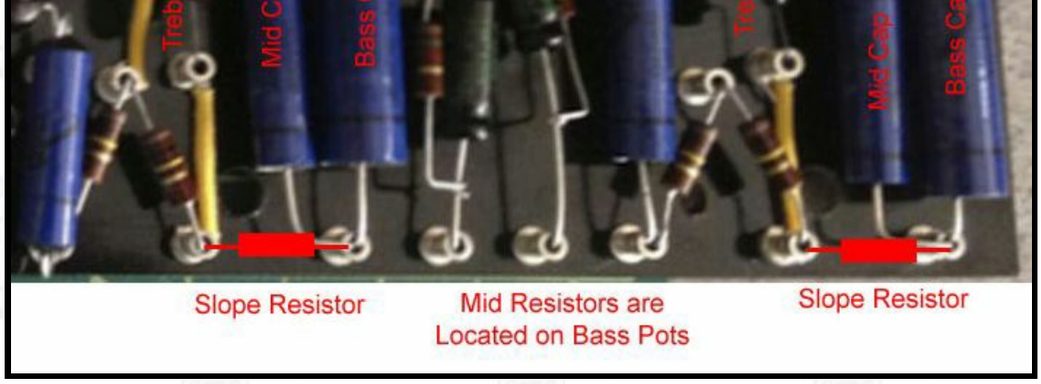
If you are considering modifying the tone stack I recommend you download the free [Duncan Amps Tone Stack Calculator] so you can see graphically what the modifications do and how the Treble and Bass pots will react to the new component values.

Duncan Amps Tone Stack Calculator

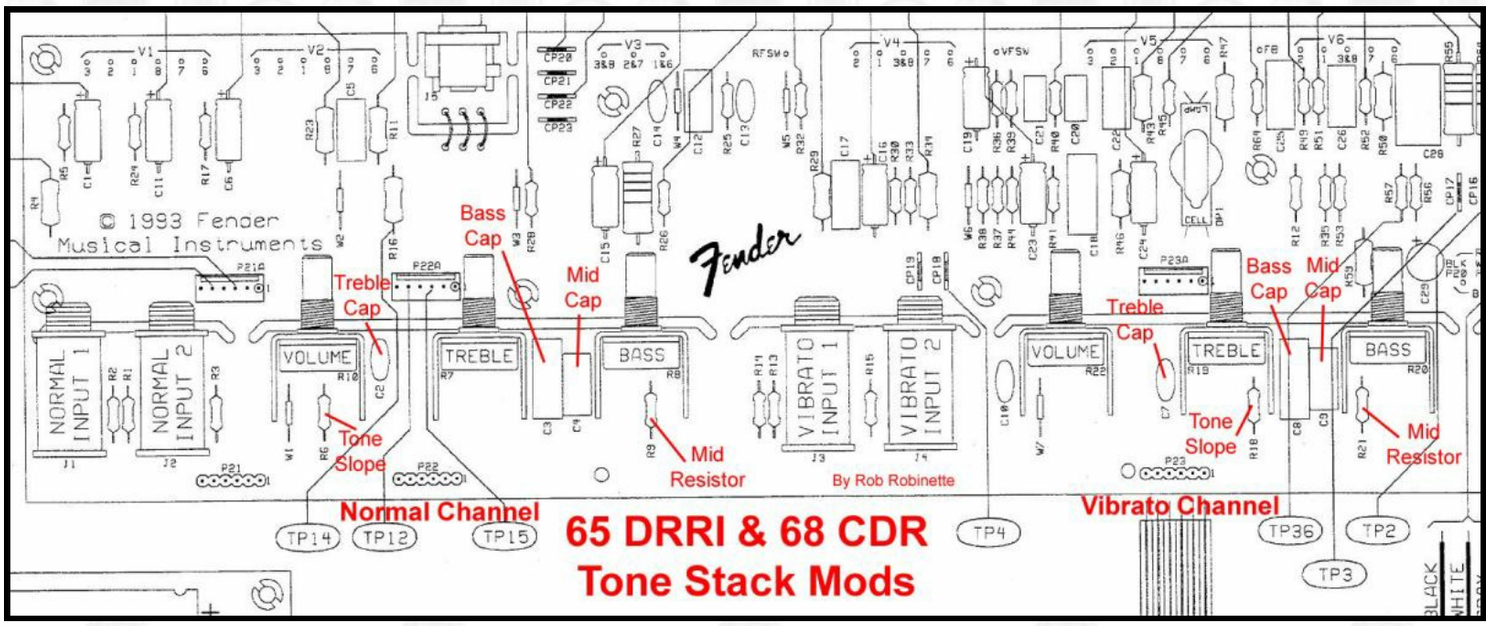


Once you get the Tone Stack Calculator running click on the Tone Stack Calculator's "Fender" tab at upper left. By setting the Mid slider (bottom left) to 68% you get 6800 ohms to equal the Deluxe Reverb's fixed 6800 ohm Mid resistor. ***You can double-click any component in the tone stack schematic to change its value*** *so it's easy to see what happens to the control movements when you change the 100k slope resistor to 56k or adjust the value of the Mid resistor. The frequency response graph on the right will change as you alter component values or move the Bass and Treble pot sliders (at bottom left). Just playing with the pot sliders and watching the graph will tell you a lot about the interactive nature of the TMB (treble mid bass) tone stack. The [Tone Stack Calculator] is a very cool tool.*

If you do install the Tone Stack Calculator be sure and see how a 25KL and 100KL Mid pot can act as a "Raw" control and boost the signal compared to a 6.8k resistor or 10KA pot.



Change the tone stack caps and resistors to suit your taste.



***65 Deluxe Reverb Reissue* & *68 Custom Deluxe Reverb* Tone Stack Part Numbers:**

Normal or Custom Channel Tone Stack

Tone Slope R6, Treble cap C2, Bass cap C3, Mid cap C4, Mid resistor R9

Vibrato or Vintage Channel Tone Stack

Tone Slope R18, Treble cap C7, Bass cap C8, Mid cap C9, Mid resistor R21

These part numbers are marked on the circuit board.

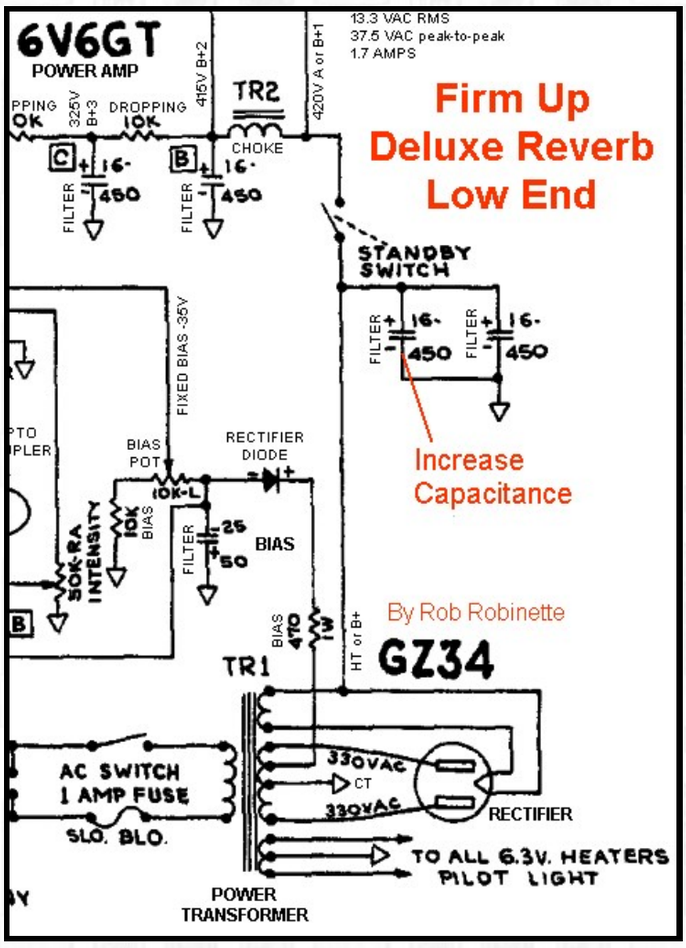
Firm Up the Deluxe Reverb's Loose Low End

The AB763 *Deluxe Reverb* and non-reverb *Deluxe* are infamous for their flabby low end that can lead to "farting out" at high volume. You can firm them up and make their tone more like their larger AB763 siblings by upping the value of the first filter capacitor. The filter capacitors are also known as reservoir caps because they store power that can be used when called upon by low frequency guitar notes and power chords.

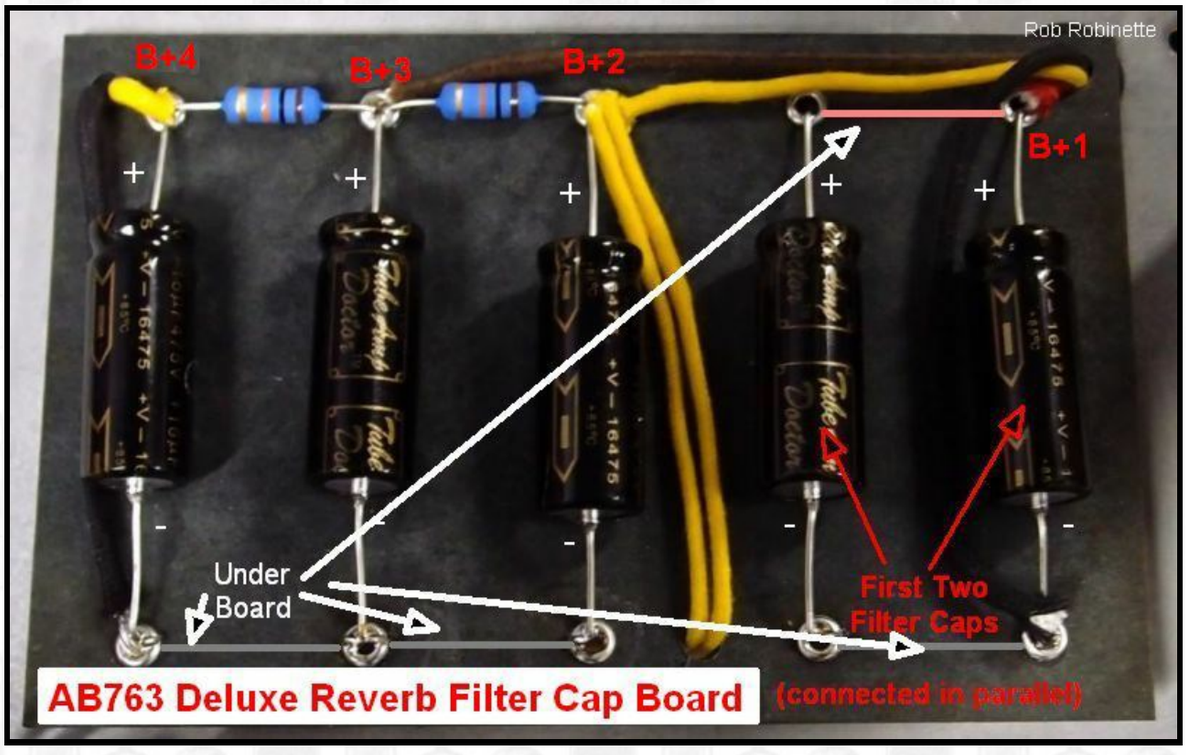
Another more extensive modification option is to upgrade the power transformer but either of these mods will decrease the amp's touch sensitivity, playability and charm so it's not for everyone. I recommend you try the larger filter cap before messing with the power transformer.

WARNING: **The first two *Deluxe Reverb* filter caps can hold their full charge if the amp is shut down with the Standby switch in Standby (disconnected). You MUST check for voltage at all the filter caps before trying this mod. If voltage above 25 volts is present then turn the amp on and make the amp ready to play by closing the Standby switch then turn the amp off. This should drain the filter caps but again, you MUST verify there is no voltage present with a volt meter.**

You can temporarily clip in a parallel 16 or 32uF 450v (or higher voltage) cap to see if you like this mod. The higher the uF value the more the amp's character will change but **you don't want the total capacitance of the first two caps to exceed 60uF** which is the limit for the *Deluxe Reverb's* rectifier. If you don't want to try multiple caps I recommend you go with a 32uF. Alligator clip the new cap's + terminal to the first large cap's + terminal and connect the - to -. The filter capacitors are located in a "dog house" next to the output transformer and you'll have to remove the chassis from the cab to access it. Be careful removing the dog house cover because the caps might be charged with 430 volts. With the temporary cap clipped in the first filter stage will be equal to all three caps added together (16uF + 16uF + 16uF = 48uF) If you like the mod then replace the first large cap with your desired larger value cap.

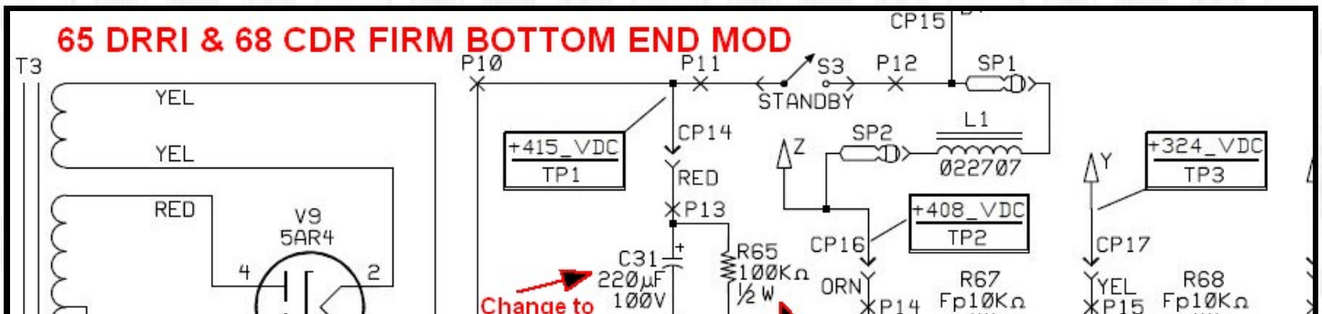


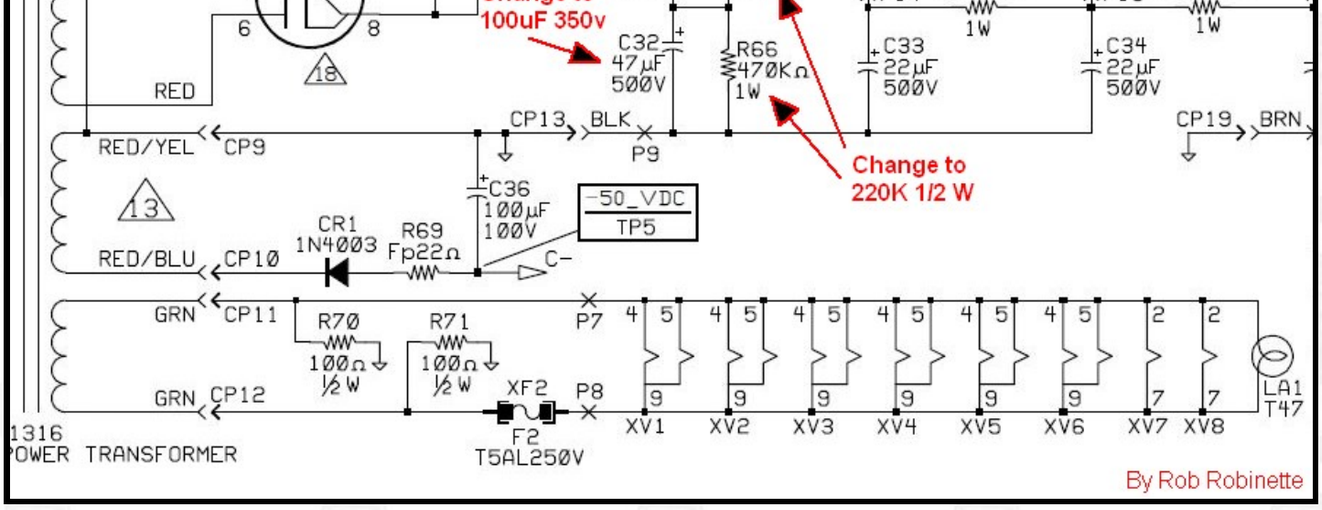
AB763 Deluxe Reverb Filter Cap Board

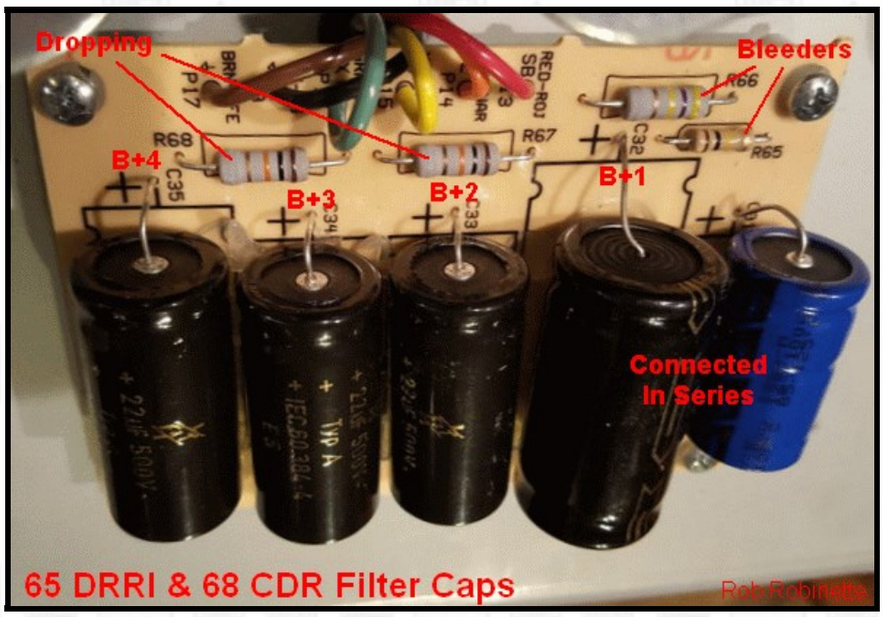


First two filter caps on the right are connected in parallel. All of these caps would be 16uF from the factory. You don't want the total capacitance of the first two caps to exceed the rectifier's 60uF limit.

The ***65 DRRI & 68 CDR's*** first two filter caps are 220uF 100v and 47uF 500v connected in series which is equivalent to a 38.7uF 600v capacitor. The 220uF cap has a 100k 1/2 watt bleeder and the 47uF has a 47k bleeder. A good upgrade is to replace the first two caps with 100uF 350v (or higher voltage) paired with 220k 1/2 watt resistors for an equivalent of 50uF 700v.



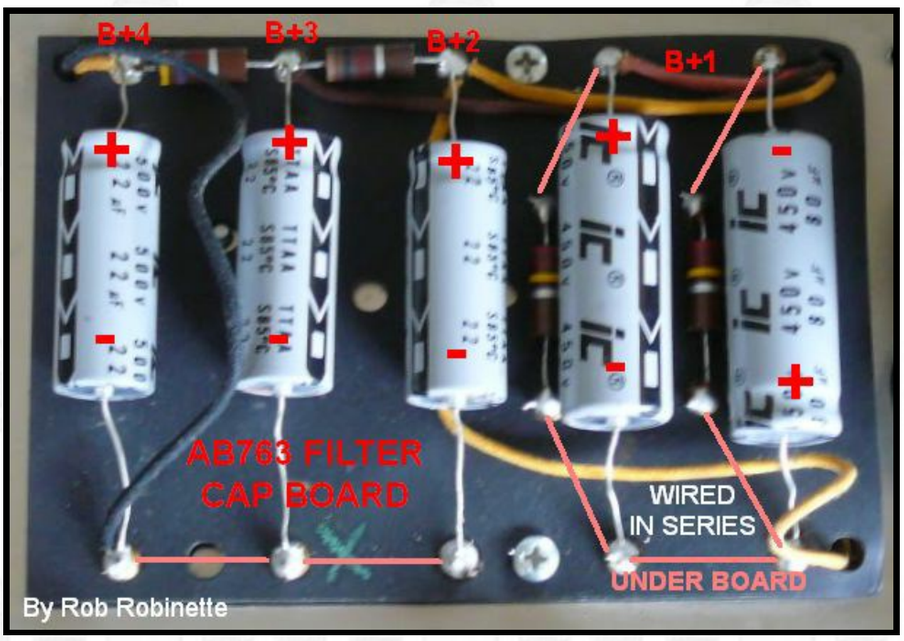




First two series caps on the right with their bleeder resistors above them.

The **other AB763 amps** first two caps are 70uF 350v filter caps connected in series. These two caps are equivalent to a 35uF 700v capacitor. One of the first two caps is upside down and they are connected + to -. They are accompanied by a 220k 1 watt bleeder resistor connected across each cap. These caps can also be upgraded to 100uF 350v (or higher voltage) for a little more power reserve.

AB763 Filter Cap Board



The first two caps on right are wired + to - in series. From the factory they are from right to left: 70uF 350v, 70uF 350v, 20uF 350v, 20uF 350v, 20uF 350v.

Tremolo Cut Switch Mod

This SPST ON/OFF mini switch completely disconnects the Tremolo circuit which will boost the guitar signal because the tremolo intensity pot places a load on the guitar audio signal. I like to orient the Tremolo Cut switch so that down is Tremolo off (switch open) and up is Tremolo on.

You can also replace the Tremolo Intensity pot with a 50KRA (reverse audio) push-pull pot. **I purchased a 50KRA pot with an off position when you turn the dial full down from [Vintage Amp Repair's ebay store](#).**

50KRA Tremolo Intensity Pot With Off Position

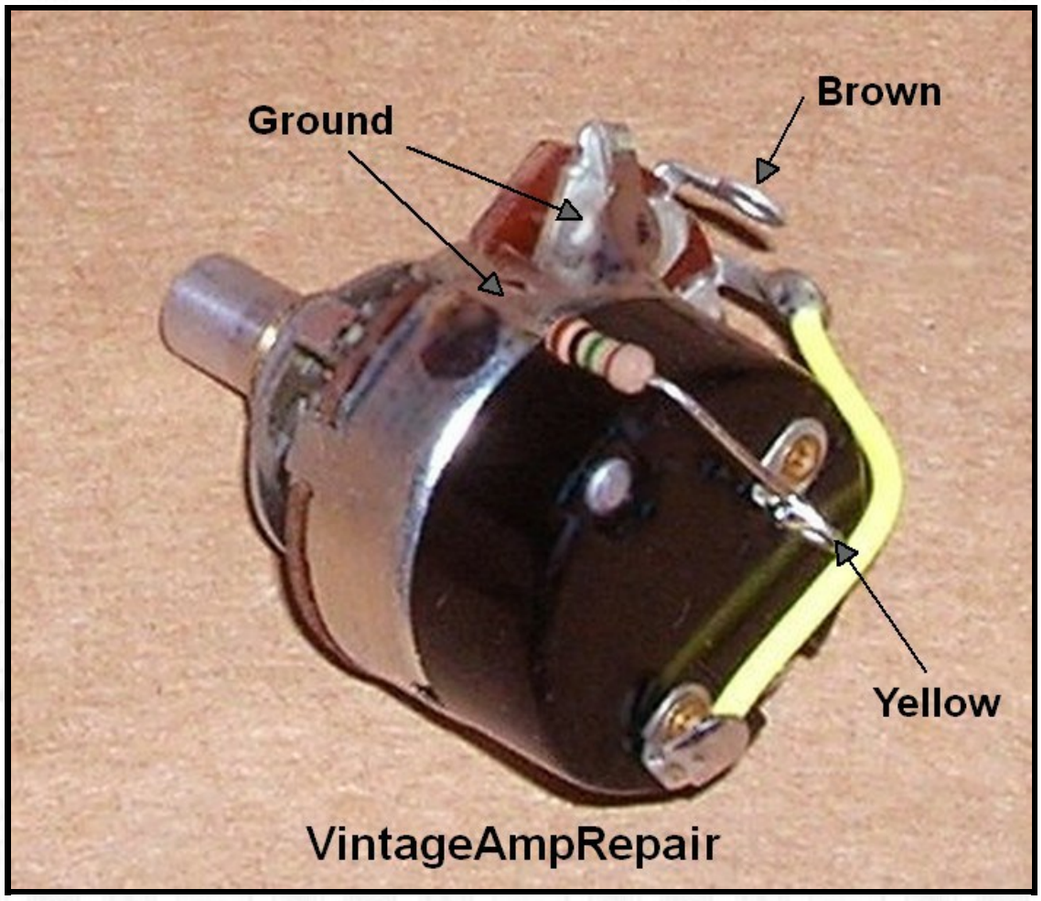
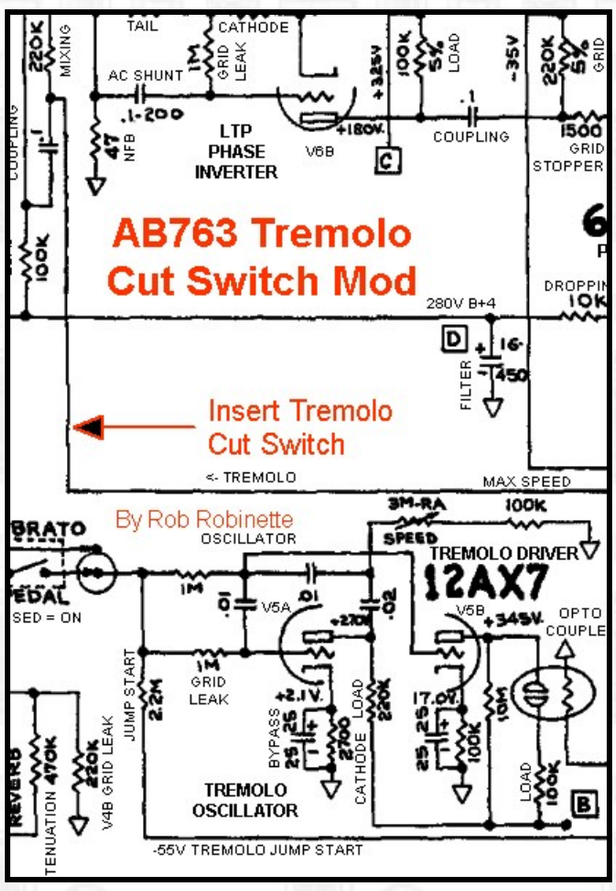
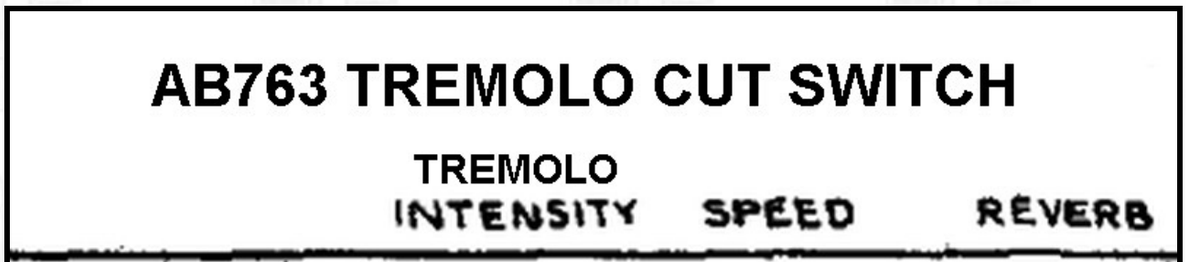
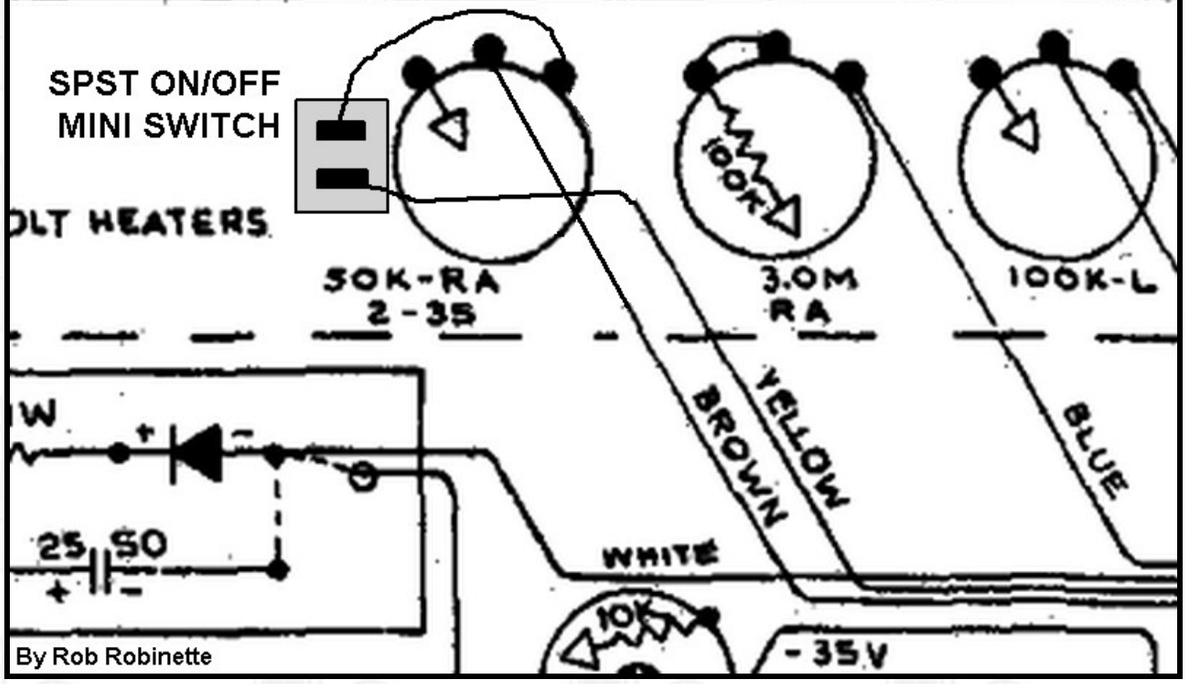


Photo by Randy Adkins, [Vintage Amp Repair](#).

No one sells a 50KRA push-pull pot but you can make one by purchasing a common 250KA (non-reverse audio) push-pull pot and a 50KRA pot, then swap the 50KRA disc into the push-pull pot. I like to wire the push-pull switch pull-on but if you are a heavy tremolo user you can wire it pull-off .







Splice in a SPST ON/OFF mini switch in the Tremolo Intensity pot's yellow (input) wire to completely disconnect the tremolo circuit.

To prevent the switch from popping when you engage tremolo you can place a 1M 1/4 watt resistor connected to ground (back of the pot) on one end and to the switch terminal that the yellow wire connects to.

This mod is a little more difficult in the ***65 Deluxe Reverb Reissue*** **&** ***68 Custom Deluxe Reverb*** because there is no wire, only a trace between the Tremolo Intensity pot and the 220k Vibrato Channel Mixing resistor R35 so you must cut the trace and bridge the cut with the Tremolo Cut switch.

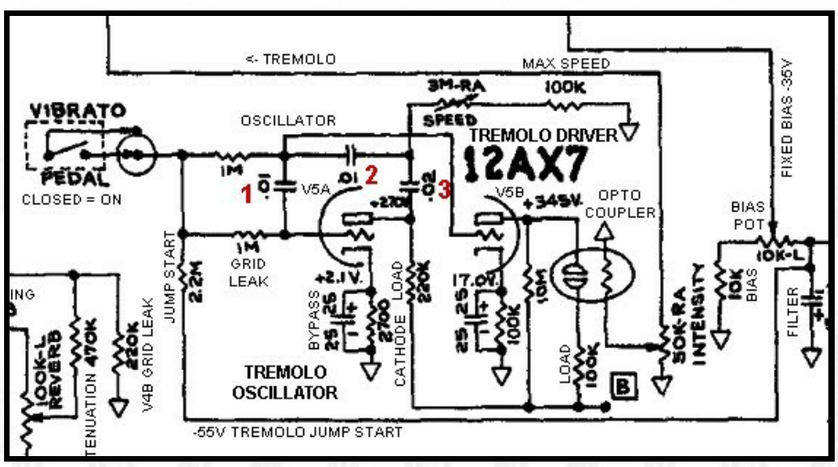
You can also reduce the tremolo circuit load and boost gain by replacing the stock 50K-RA (reverse audio) Tremolo Intensity pot with a 100K-RA pot.

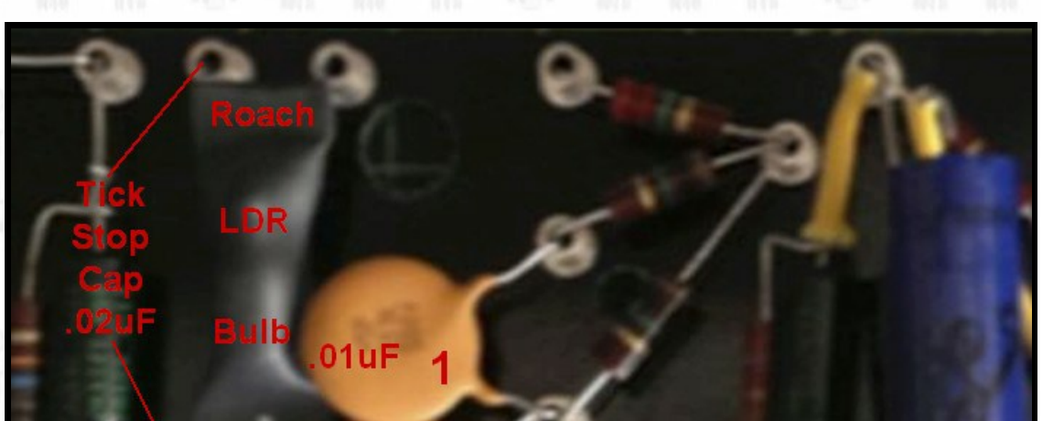
Slow the Tremolo

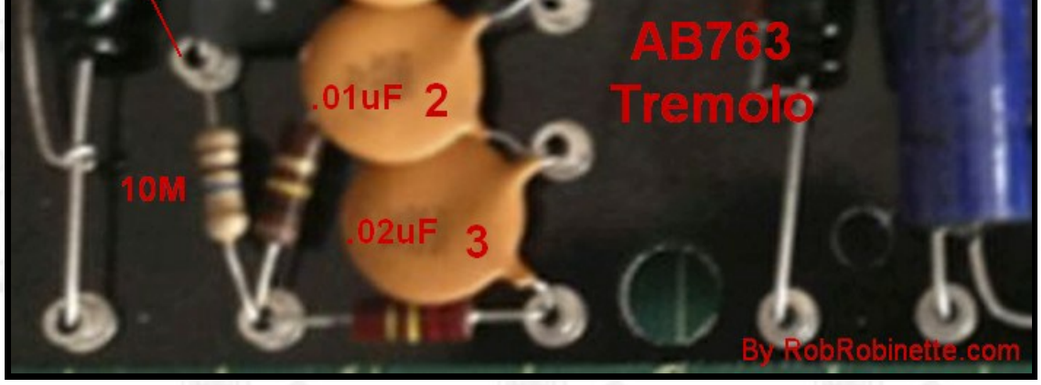
This is a pretty common mod that allows a slower tremolo which I really like. The tremolo circuit has three disk capacitors. Two are .01uF and the other is .02uF. Replace the two .01uF caps with .02uF 400v (or higher voltage) to slow the tremolo. Many people like to use Orange Drop caps in the tremolo oscillator.

If after this mod you would like a faster maximum tremolo speed you can reduce the size of the 100k "Max Speed" resistor located on the Tremolo Speed pot.

This mod puts a little more strain on the V5 tremolo tube so if the tremolo stops working after changing the two caps just install a fresh 12AX7.



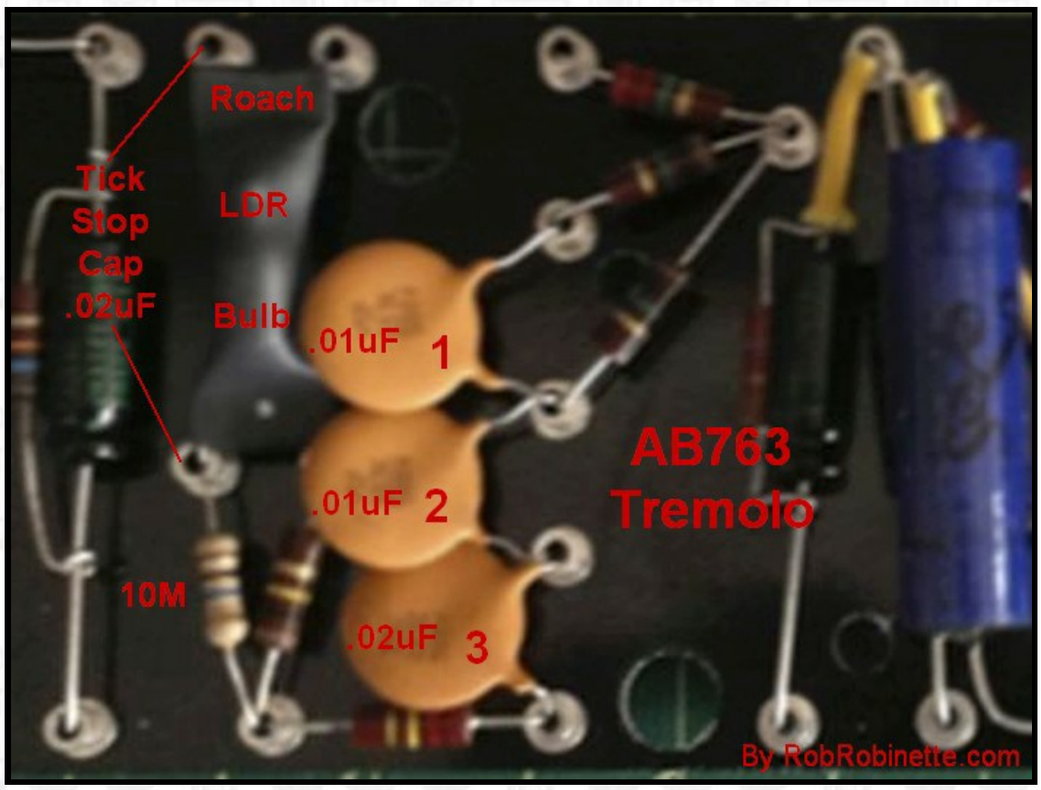




Disk cap numbers 1, 2 and 3 match the numbers in the schematic above. Replace #1 and #2 with .02uF 400v caps.

Stop Tremolo Ticking

The tremolo oscillator can induce ticking into the amp's signal stream. First try to separate the tremolo wires from any grid wires to stop the ticking. If that doesn't work adding a .02uF cap to the tremolo roach should stop it.



Add a .02uF 400v (or higher voltage) cap across the left side of the tremolo roach to cure tremolo tick.

Tremolo Always On RCA Plug

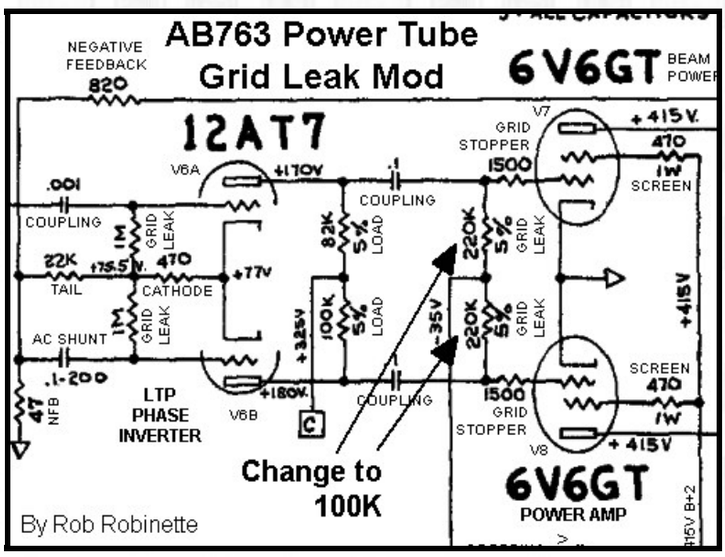
Blackface amps have a female RCA jack for the tremolo foot switch. Tremolo is turned on when the footswitch is closed. This little shorted male RCA plug will turn on the tremolo without having to plug in the tremolo footswitch. I like to keep mine in all the time. The $1 Switchcraft 3501MX RCA plug is a perfect fit with a long center connector.

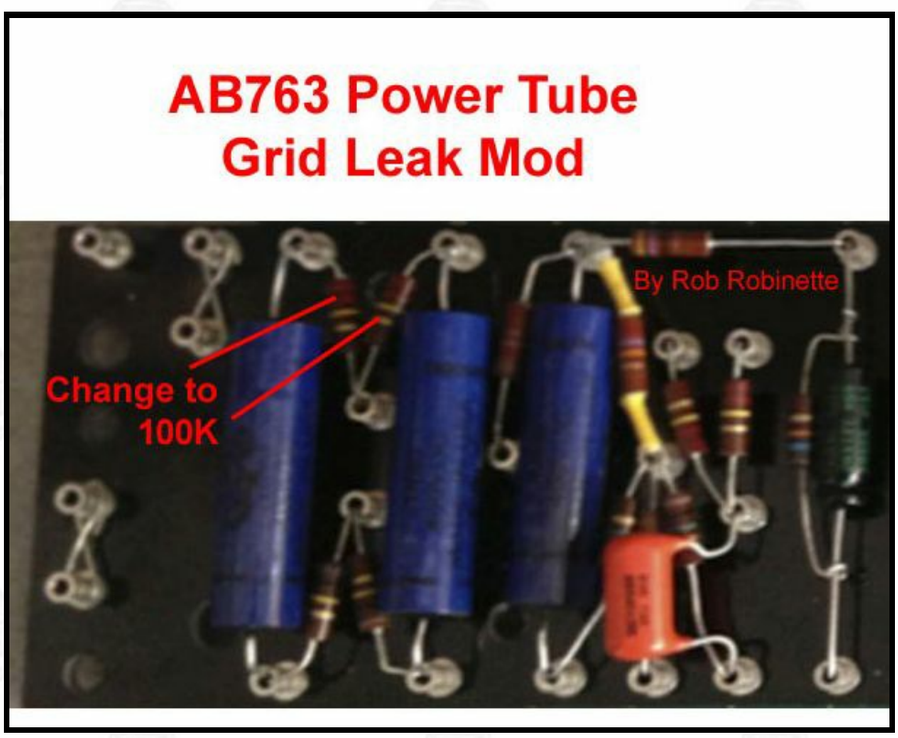
Switchcraft 3501MX RCA Plug

To short the plug insert a bare wire all the way through the connector--there's a hole in the end of the prong so run the wire all the way through then solder both ends of the wire to the plug. Be generous with the solder. Trim the wire flush at both ends and you're done.

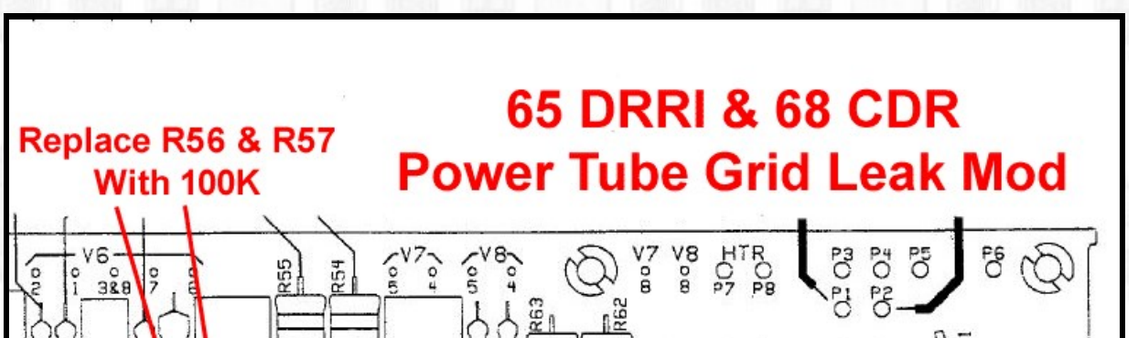
Power Tube Grid Leak Mod

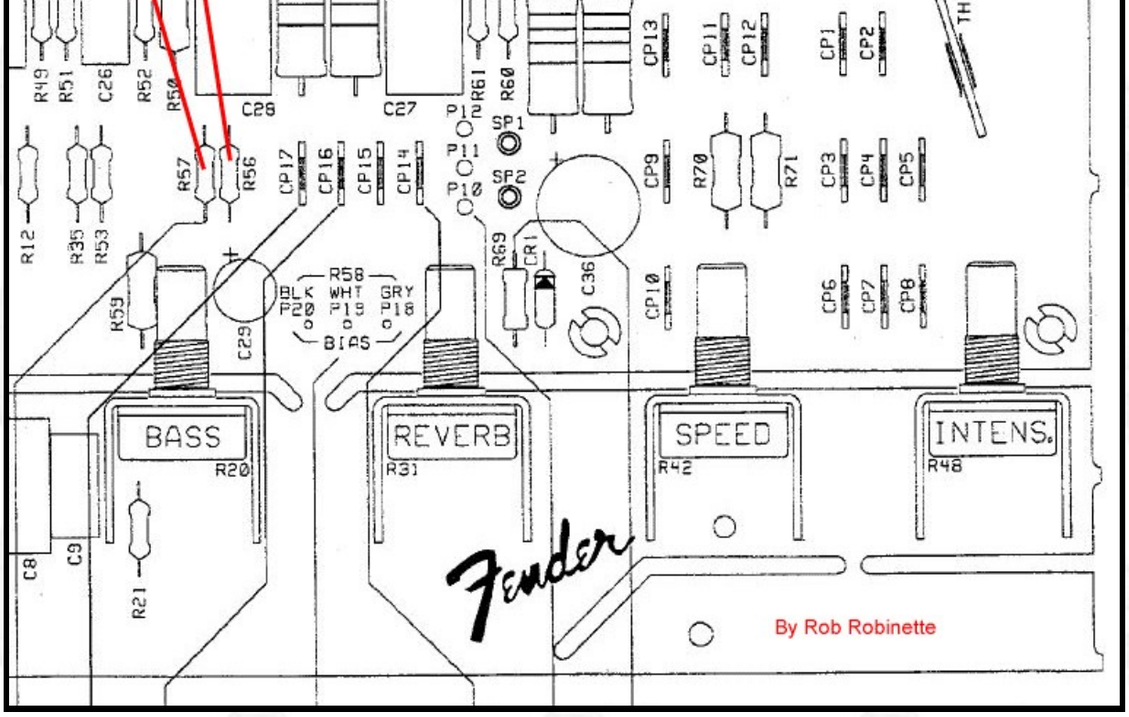
If you regularly push your AB763 amp hard into distortion then reducing the power tube grid leak resistors from the Fender standard 220k, down to the Marshall standard 100k 1/2 watt can sweeten the power tube overdrive tone. Doing this reduces the likelihood of blocking distortion because it reduces the charge and discharge time of the coupling cap between the phase inverter and the power tubes. The lower value grid leaks also reduce the gain from the phase inverter which also reduces the possibility of blocking distortion. See **Tube Guitar Amplifier Overdrive** for more info on blocking distortion.



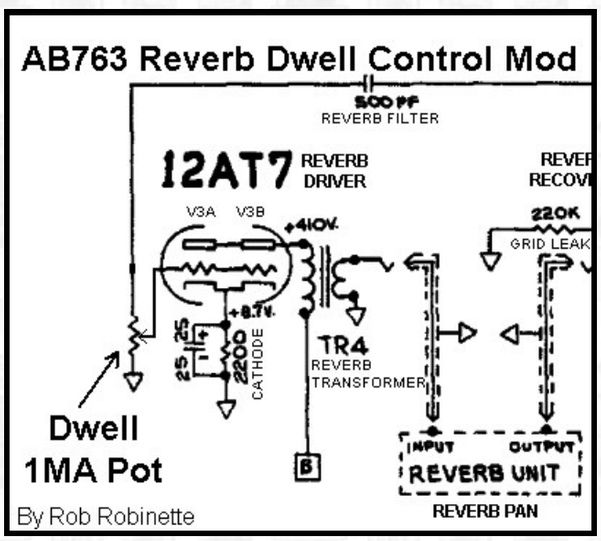


The 220k 1/2 watt power tube grid leak resistors are on the far left end of the circuit board.

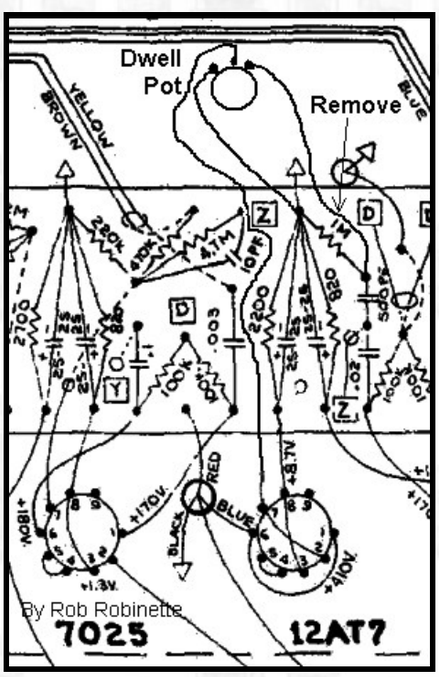




Add an AB763 Reverb Dwell Control



Simply replace the 12AT7 1M grid leak resistor with a 1MA pot. The Dwell control is a reverb circuit master volume.



12AT7 1M grid leak resistor clipped or removed. 1MA pot wired in its place.

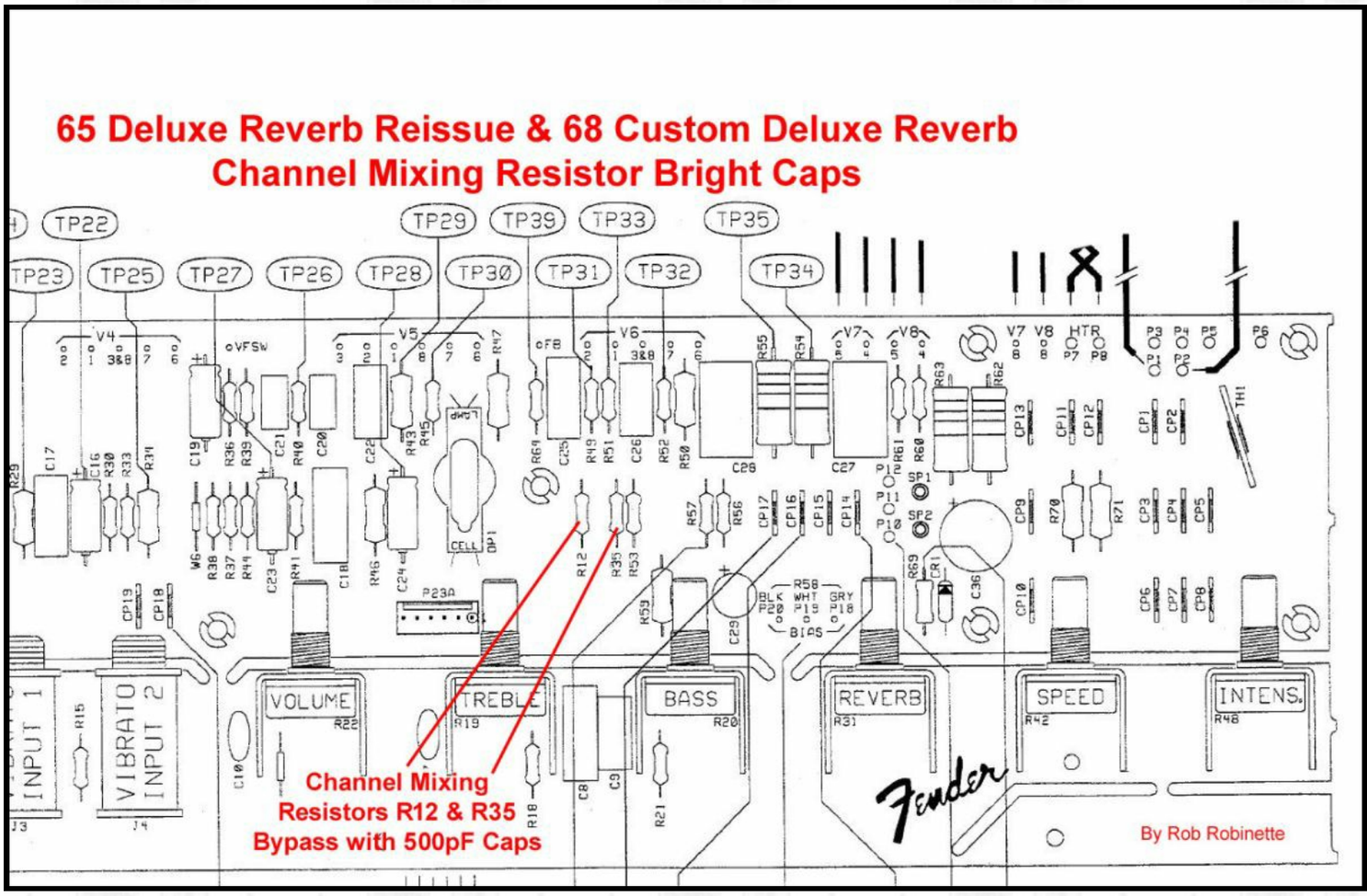
The Reverb driver 1M grid leak works with the 500pF Reverb Filter cap to form a CR (capacitance-resistance) high pass filter with a corner freq of 318Hz (everything below 318Hz is cut). By replacing the 1M grid leak with a 1MA pot you will not only cut the amount of guitar signal entering the reverb driver as you turn down the Dwell pot but you will lower the CR corner freq as well which will allow more low freqs into the reverb circuit.

Place your dwell pot or trimmer wherever you want. Remove the 1M resistor. Wire the pot's left terminal to any ground. Wire the right terminal to the now empty right resistor eyelet (or turret). Wire the pot's center terminal (wiper) to V3 (12AT7) pin 7.

Channel Mixing Resistor Bright Caps Mod

Putting 500pF bright caps around the 220k Channel Mixing resistors will slightly brighten the tone of the modified channel. You can do one or both channels. If you only want to do one then I recommend doing the Vibrato channel since it is the brighter of the two channels. You can alligator clip the cap in place temporarily to see if you like the mod.

The 220k Channel Mixing resistor on the left is the Normal Channel's, the Vibrato Channel's resistor is on the right. Original photo by John Chabalko.



For the 65 Deluxe Reverb Reissue & 68 Custom Deluxe Reverb *the Normal Channel Mixing resistor is R12. The Vibrato Channel Mixing resistor is R35. The circuit board has these parts labeled.*

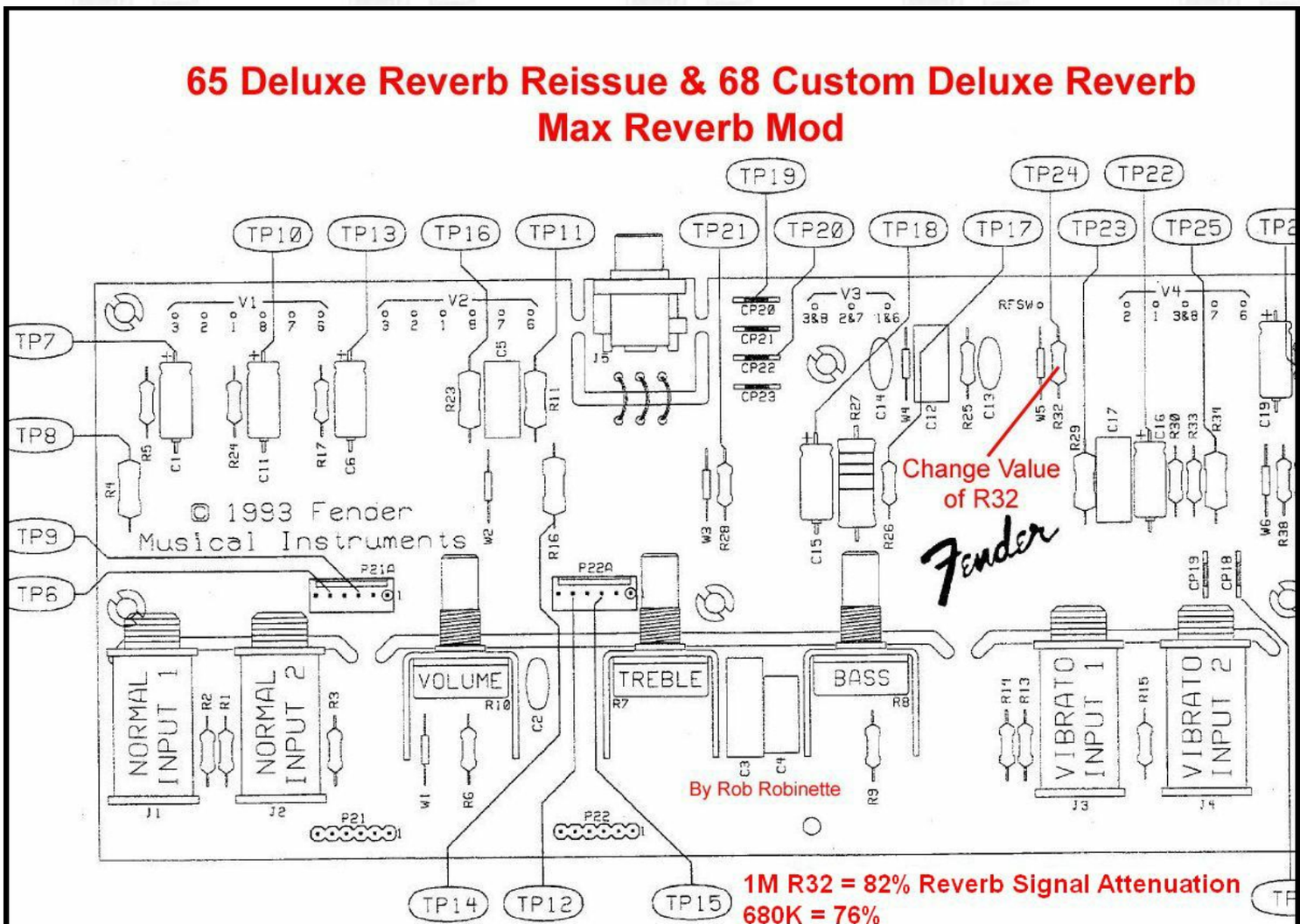
Max Reverb Mod

If you want to change the maximum reverb that 10 on the Reverb knob gives you then this mod is for you.

At the output of the Reverb circuit the wet reverb signal flows through the Reverb pot, then through a 470k Reverb Attenuation resistor that forms a voltage divider with the following V4B (3rd stage preamp) 220k Grid Leak resistor and dumps 68% of the wet reverb signal to ground. You can tweak the reverb output level by changing the 470k Reverb Attenuation resistor. To increase the max reverb level replace it with a 220k and the attenuation drops to 50% and 110k will give 33% attenuation. Replacing the resistor with a jumper (or bypassing the resistor) will give 0% attenuation.

You can also go the other way and decrease the wet signal strength by upping the Reverb Attenuation resistor value to 680k for 24% attenuation or 1M for 18%, but before you change the resistor value try a 12AU7 in the V3 Reverb Driver socket in place of the standard 12AT7. You might be happy with the cut in reverb signal with just a simple tube swap.

Decreasing the value of the 470k Reverb Attenuation resistor will boost the wet reverb signal level.



470K = 68% <- This is the standard value
220K = 50%
110K = 33%
0k (bypass) = 0% Attenuation

For the 65 Deluxe Reverb Reissue & 68 Custom Deluxe Reverb *the 470k Reverb Attenuation resistor is R32. The circuit board has this part labeled.*

Reduce Ice Pick Highs

If your particular speakers are giving you too many 'ice pick' highs simply **adding a 100pF Mica capacitor across the feedback resistor** will filter out some very high freqs that can cause ice pick highs. The cap allows high freqs to go around the feedback resistor so they are used for feedback which will reduce them from the amp's output. This is a nice, subtle mod that won't screw up your *AB763's* perfect tone. **It's easy to use alligator clips to clip the cap in place temporarily to see if you like the mod**. If you would like to cut even more highs than the 100pF cap, you can go all the way up to a .022uF cap to lower the filter's cutoff freq so more mid-high freqs would be cut. There's a small chance the Ice Pick Cap can induce oscillation at high volume. If that happens you can put a 4.7k resistor in series with the cap to reduce the very high frequencies that cause oscillation.

This is an Ice Pick Cap on a 5F6A Bassman but it works the same way in the AB763. Just put the cap around the 820 ohm Negative Feedback resistor.

Reduce Resistor Hiss Mod

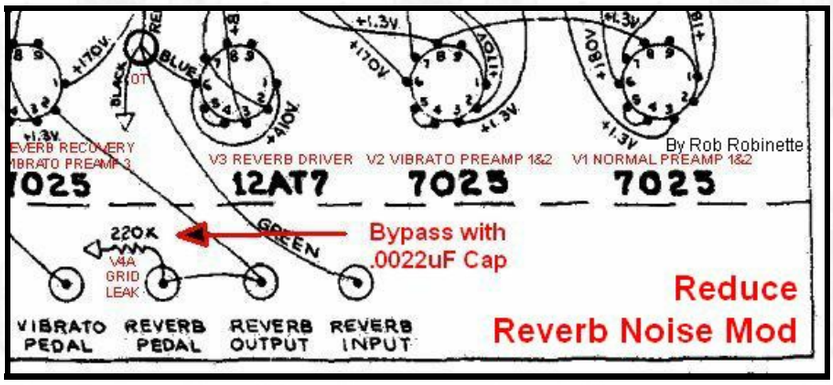
Replace all the signal resistors (especially 1M input, plate load, grid leak and grid stopper resistors) with metal film resistors like the Vishay RN65 for less noise (hiss). Most AB763 kits use period correct carbon composition resistors but **metal film resistors** generate 1/10th the noise of carbon comp. In reality resistor hiss is usually drowned out by filament heater hum and power supply ripple so this won't be a dramatic improvement but every little bit helps with noise suppression. If you want to be thorough then replace every resistor except for the higher watt rated voltage dropping resistors located in the capacitor "dog house" between the filter caps. I also like to leave the phase inverter 22k tail resistor and the 100k & 82K phase inverter plate load resistors carbon comp (1 watt preferred) to ensure "vintage" carbon comp tone without generating excess noise.

This is one of those mods that's much easier to implement during a new kit build.

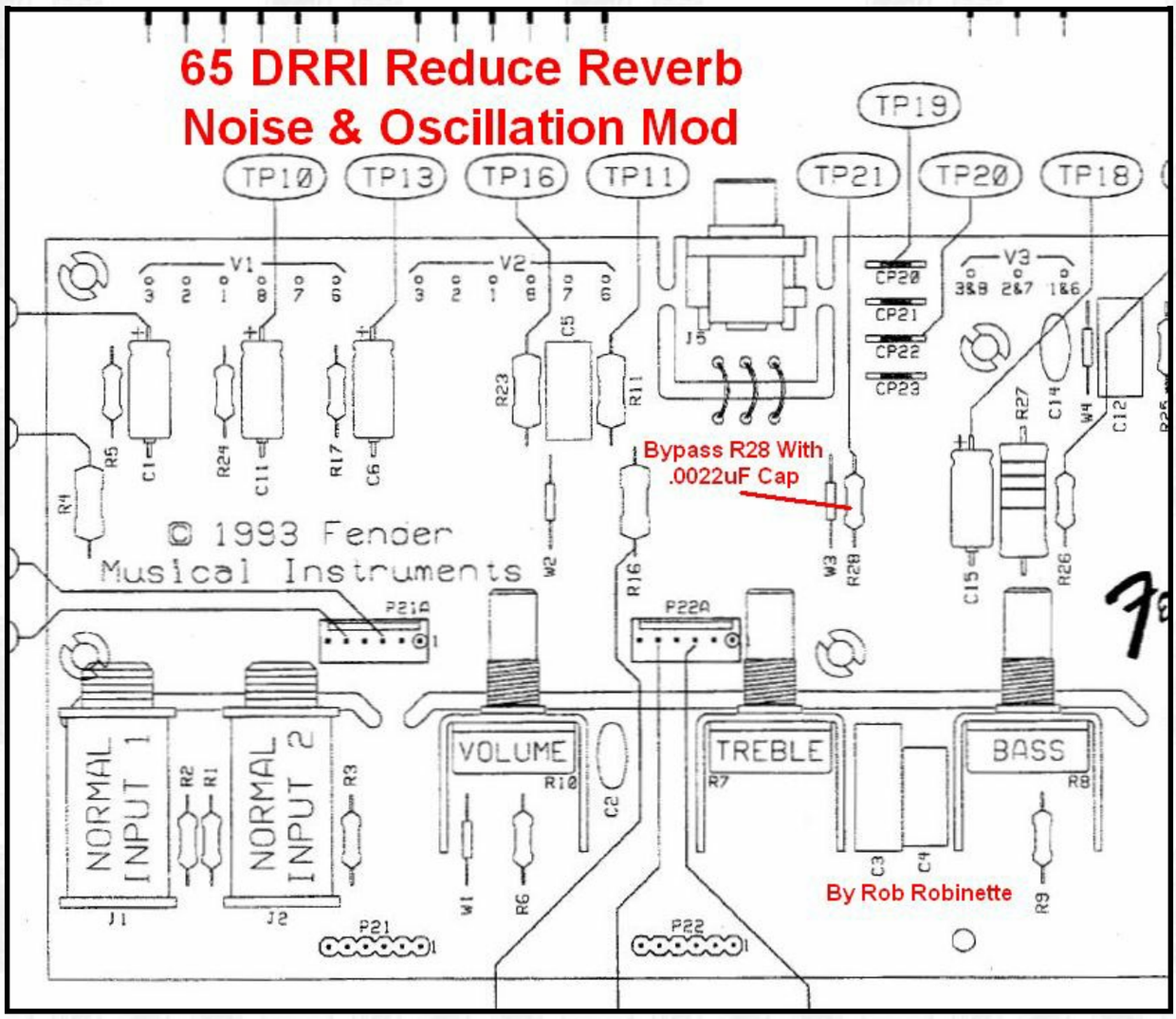
Reduce Reverb Noise & Oscillation

Fender added a .0022uF capacitor across the 220k V4A Reverb Recovery Grid Leak resistor in the A1172 silverface circuit. This cap can be seen in all *Deluxe Reverbs* through the *Deluxe Reverb II*. It's purpose is to filter

out unneeded high frequencies which helps cut noise and prevent oscillation in the sensitive reverb circuit. If you have trouble with reverb in your amp this little cap can work wonders. The *68 Custom Deluxe Reverb* already has a noise suppression cap in the reverb recovery circuit.



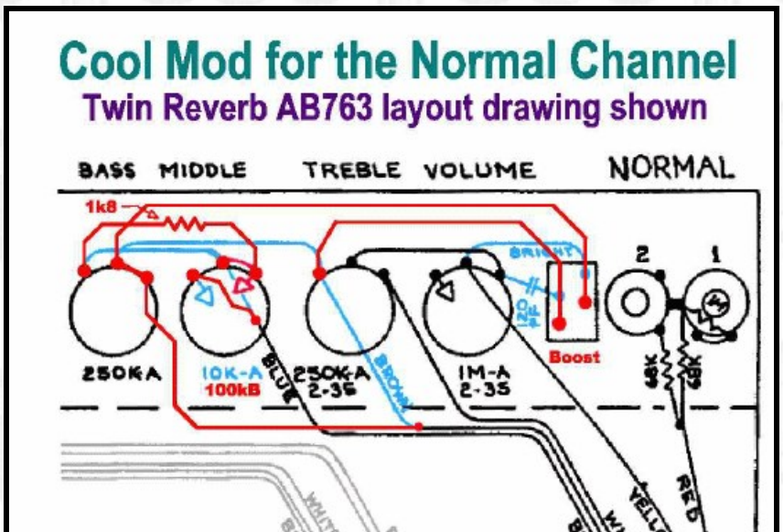
Solder a .0022uF bypass cap around the 220k V4A Grid Leak resistor.

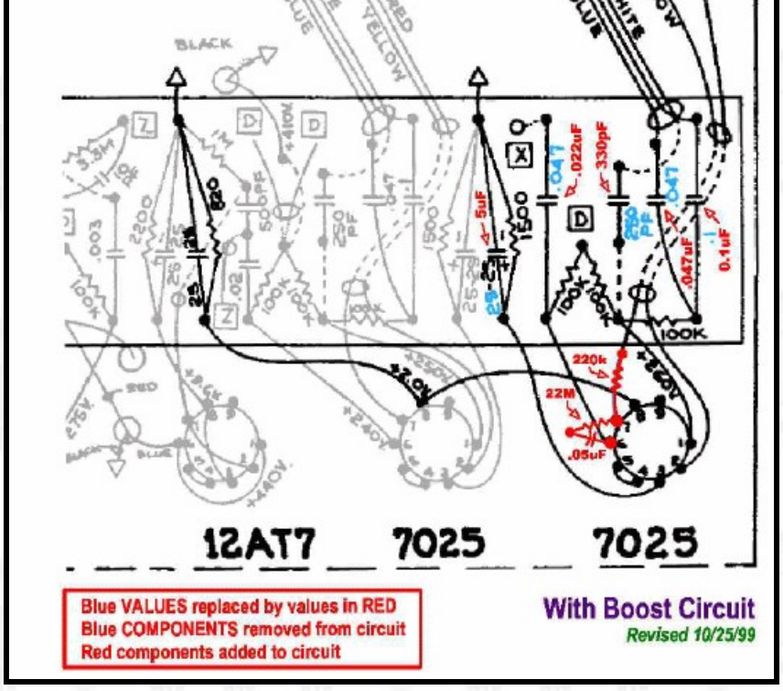


Dumble AB763 Mods

I haven't tried any of the Dumble mods but I include them here for completeness.

Dumble Cool Mod + Boost Switch





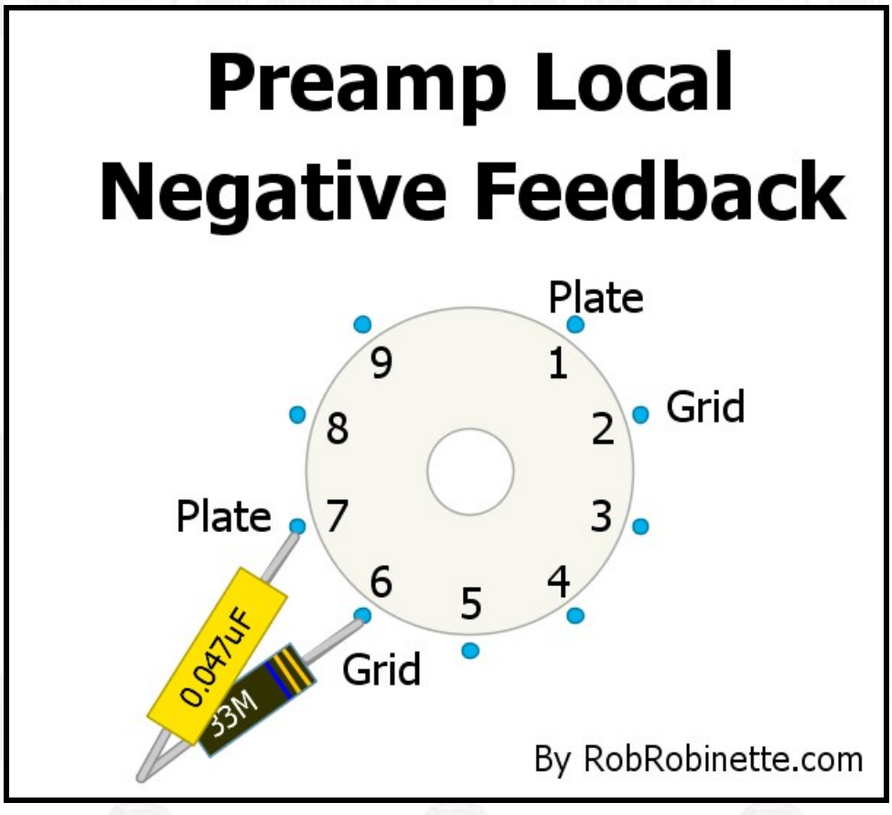
Turns the Bright Switch into a Boost Switch. Remove the blue stuff and replace it with the red. Note the Normal Channel tone stack's mid .047uF and bass .1uF caps are not changed even though they are shown in red.

These mods were designed to be coupled with an additional gain stage so they by themselves will alter the Normal Channel's tone but not really in the way intended. You may or may not like what they do but they should work really well with gain or boost pedals.

The **Cool Mod** lowers the value of the Normal Channel first gain stage cathode bypass cap from 25uF to 5uF to reduce the emphasis on lower bass frequencies which helps keep the overdrive tone tight.

The mod adds a 220k grid stopper resistor to the Normal Channel's second gain stage (V1B) which helps prevent blocking distortion which comes in handy when you add a gain stage between V1A and V1B like the original Dumble AB763 Mod did. The added grid stopper also helps when you hammer the amp with a big boost or gain pedal. Another option here is to parallel the new 220k grid stopper with a 390pF bright cap if you want to add some highs.

The Cool Mod adds a local negative feedback loop to the Normal Channel's second gain stage (V1B). It's negative feedback because the plate is 180 degrees out of phase with the grid. The mod connects V1B's plate back to the grid through a 22M resistor and .047uF (400v or higher) cap.



A 22M to 44M resistor and .047uF 400v+ cap connect the preamp grid and plate together to form a local negative feedback loop. The mod can also be used on the "A" triode pins 1 and 2.

Like most amplifier negative feedback loops this mod will reduce distortion, tighten the transition from clean to dirt and slightly reduce gain. At first blush I was going to recommend not using this mod on the first stage of amplification because if the cap fails as a short it could inject high voltage into the guitar circuitry but even if this does happen the large value feedback resistor will limit the current to 18 micro amps (.018 milliamp) or less

so it's not a concern. This mod would be of relatively little use in the first gain stage anyway since it is rarely overdriven.

If this NFB loop tightens up the tone too much try a larger value resistor like a 44M. The larger the resistor the less negative feedback gets through to the grid. This is a pretty cool yet extremely simple circuit that should be experimented with in all high gain preamps.

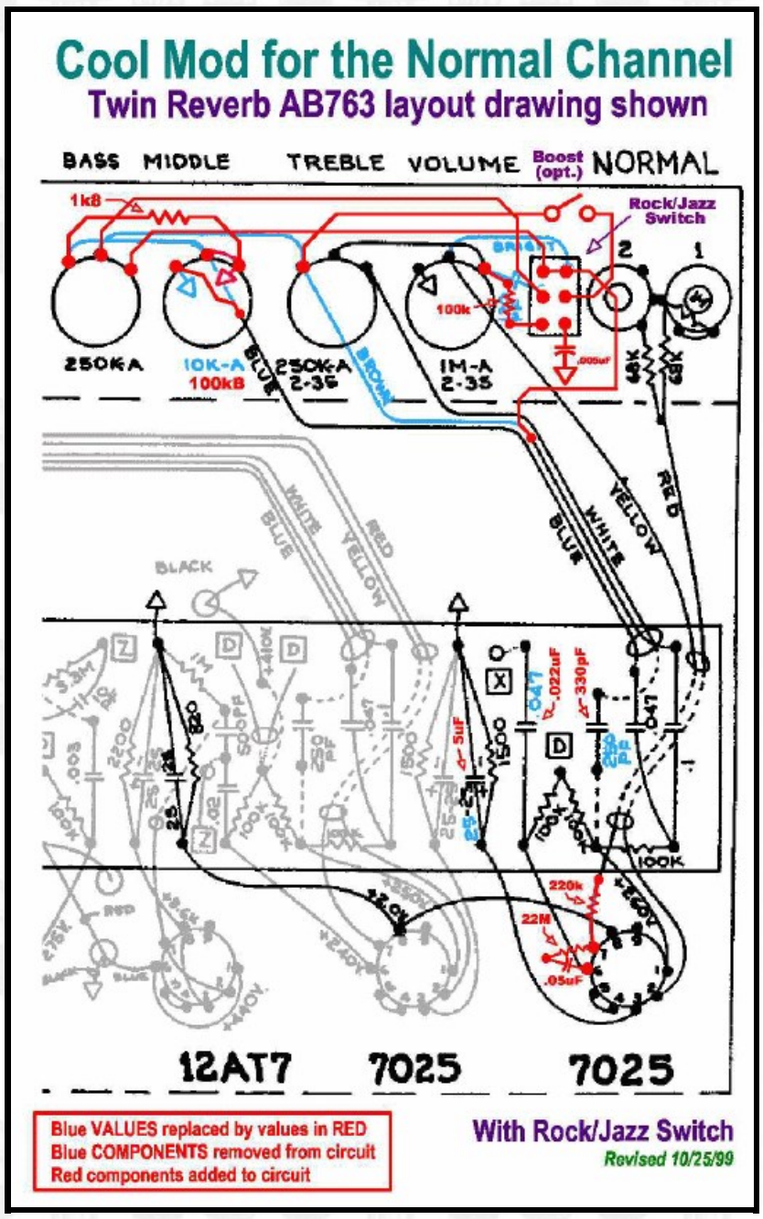
The Cool Mod also reduces the size of the Normal Channel coupling cap by half, going from .047uF to .022uF to trim some unneeded low frequencies which will tighten up the overdrive tone.

The Cool Mod also alters the Normal Channel tone stack with a change from a 250pF to a 330pF Treble cap which boosts the mids and allows the Treble tone control to reach deeper into the mids. A 1.8k "minimum bass" resistor is added to the tone stack that keeps the bass from falling off a cliff as you approach the minimum Bass pot setting. The downside is it slightly limits how low you can set the bass. The *68 Custom Deluxe Reverb* has an 18k minimum bass resistor in the same position. You can add this resistor to any AB763 by replacing the wire that runs between the Bass and Middle pots (or Middle resistor) with an 18k resistor.

The mod also replaces the 10KA (audio or log taper) Middle pot with a 100KB (linear) pot which acts as a "Raw Control." The first 1/10 of the Mid pot movement is equivalent to the entire original 10KA Mid pot. As you roll in more Mid control the mid scoop is removed and the signal is boosted across the frequency spectrum.

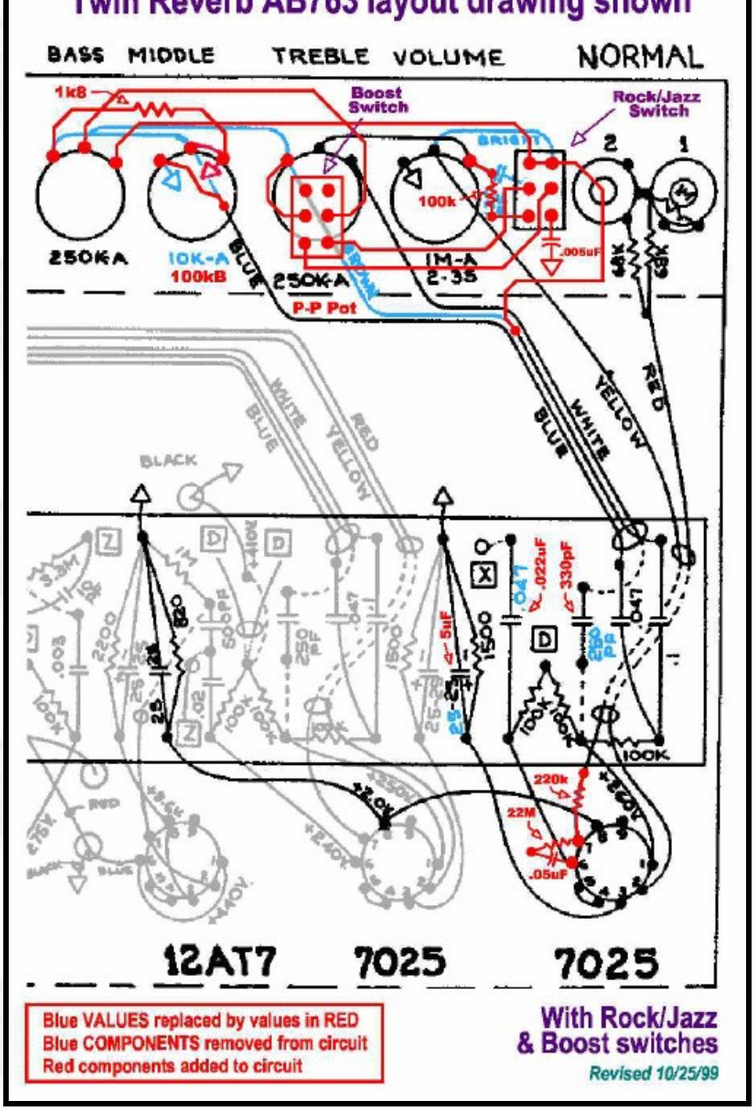
The **Boost Switch** works as a standard "**Raw Switch**" which lifts the tone stack's ground effectively removing it from the circuit which completely removes the famous blackface mid scoop and offers up a big boost in signal.

Dumble Cool Mod + Rock/Jazz Switch + Optional Separate Boost Switch



The Rock/Jazz Switch in the Jazz position filters out some bass and mid frequencies. Note the optional separate "Boost (opt.)" SPST (single post single throw) switch between the Volume pot and Input jack.

Dumble Cool Mod + Rock/Jazz Switch + Push-Pull Pot Boost Switch



The only difference from above is the Boost Switch is shown on a 250KA (audio or log) push-pull Treble pot.

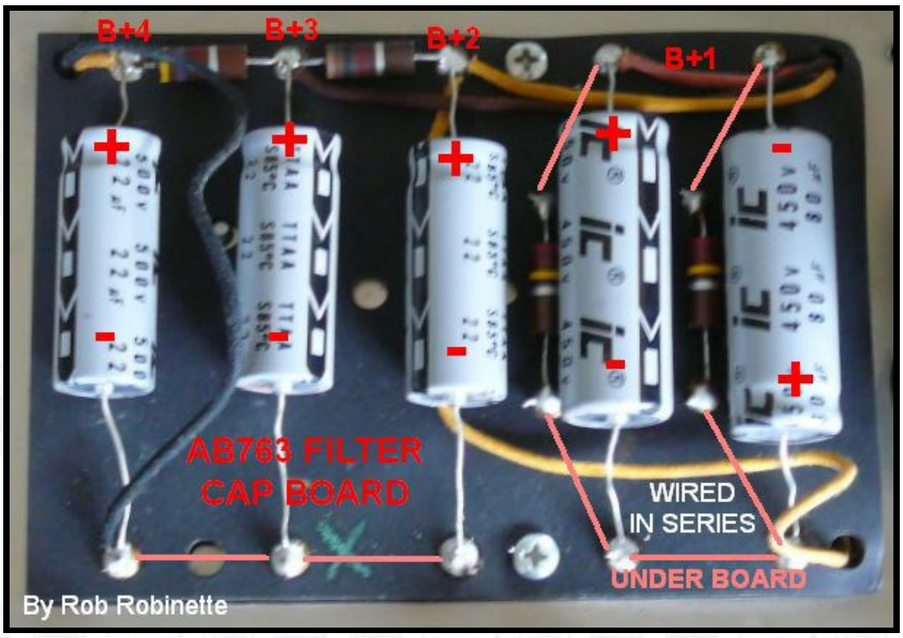
Convert a Band-Master Into a Vibrolux, Tremolux, Pro, Concert or No-Reverb Vibroverb or Super Reverb

The *Vibrolux* and *Vibroverb* combos are much more sought after amps these days than the lowly *Band-Master* head but their differences are trivial and **converting a *Band-Master* into any of the 2x6L6 AB763s is an easy mod**. You can buy a $500 AB763 *Band-Master* head and place the chassis in a 1x12 cab for a *Vibrolux;* a 1x15 cab for a Pro or no-reverb *Vibroverb; a 4x10 cab for a Concert* or no-reverb *Super Reverb* and install a 4 ohm speaker load rated at a total of 75 watts or higher.

2x10 Band-Master Combo Conversion

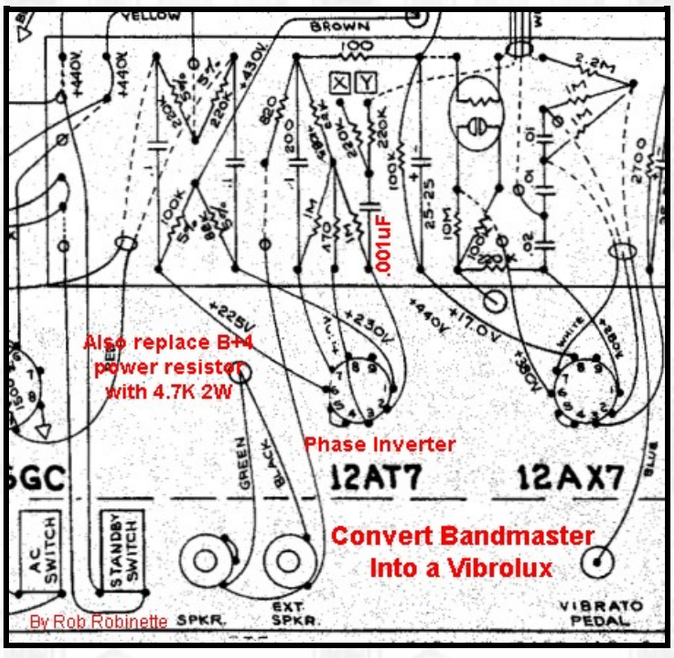
To convert the *Band-Master* into a *Vibrolux* or *Tremolux* you need to replace the *Band-Master's* 4.7k B+4 power resistor (located in the "dog house") with a 10k 2 watt to match the *Vibrolux's* lower preamp voltages. **If you want to simulate the *Vibrolux* tube rectifier in the *Band-Master* you can insert a 62 ohm 5 watt resistor between the rectifier and first filter cap to get the 10v drop and sag of a GZ34**.

Band-Master Filter Cap Board



The filter cap board is located under the "dog house" cover outside the chassis next to the output transformer. Replace the resistor between the "B+4" and "B+3" label above with a 10k 2 watt resistor.

Next swap out the *Band-Master's* 500pF phase inverter coupling cap for the a .001uF (1000pF) 200v (or higher voltage).



Replace the Band-Master's 500pF phase inverter coupling cap with a .001uF 200v.

To convert a *Band-Master* to a *Pro, Concert* or no-reverb *Vibroverb* the only mod required is the phase inverter coupling cap change shown above. You don't need to modify the power resistor. Another mod to consider for a *Vibroverb* conversion is to install a Tremolo Cut Switch which will boost the amp's gain to mimic the 3 preamp gain stage *Vibroverb*. For a *Super Reverb* or *Concert* conversion change out the two tone stack's mid caps for .022uF 200v (or higher voltage). I really like the JBL D130F 15" speaker, or Weber's version, the Ceramic California 15 (4 ohm, 80 watt, paper dome), for the *Vibroverb*.

It's true the *Vibrolux* and *Vibroverb* have an 8 ohm output transformer secondary where the *Band-Master* has a 4

ohm but that will make no difference if you connect a matching speaker.

Another 2x10 Band-Master Combo Conversion

Photo and mods by BobbyZ.

I'm a head amp fan so I usually leave my head amps in their original cab but there are several sources for nice blackface combo cabs to place your *Band-Master* chassis. The standards are 1x12 for the *Vibrolux* conversion, 1x15 for the *Vibroverb* and 4x10 for the *Pro* and *Super Reverb*. I've heard good things about Mojotone's cabs and Mather Cabs. If you order a cab be sure and tell them it's for a *Band-Master* chassis.

Convert a 65 Deluxe Reverb Reissue (DRRI) Into a 68 Custom Deluxe Reverb (68 CDR)

Differences between the *65 Deluxe Reverb Reissue* and *68 Custom Deluxe Reverb*:

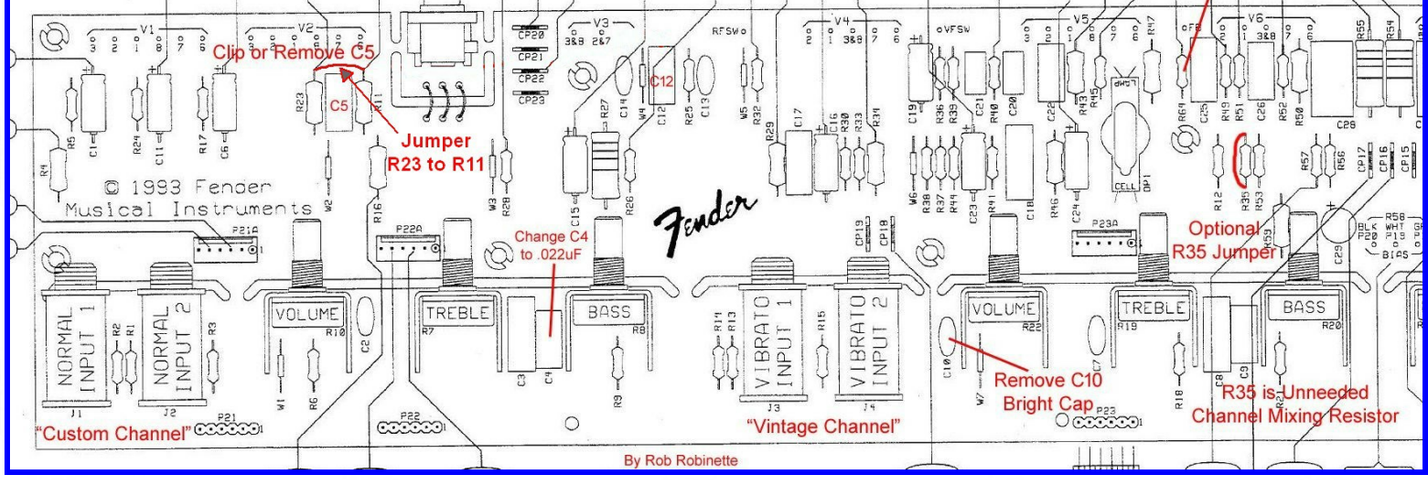
British voiced 12” Celestion G12V-70 speaker.

Reverb and tremolo are available on both Vintage & Custom channels. On the *68 CDR* they call the Vibrato Channel the "Vintage" Channel and they call the Normal Channel the "Custom" Channel. Both channels go through the third preamp gain stage V4B so both channels are now in phase so you can jumper channels for a thicker tone.

Negative feedback is cut in half by doubling the size of the NFB resistor. Less feedback thickens up the clean tone with extra harmonics, slows the transition from clean to dirt but adds some resistor hiss. Some users find the extra hiss objectionable. Personally I like the lower feedback of the 68 CDR and feel the hiss is worth the trouble.

Vintage (Vibrato) channel bright cap has been removed from the volume pot.

The Custom (Normal) Channel's tone stack has a smaller .02 Mid cap and an extra 18k resistor between the Bass pot and Mid resistor. The smaller Mid caps shifts the mid band and mid scoop up frequency. The 18k resistor acts as a "Bass Floor" and keeps the bass from falling off a cliff as you approach minimum Bass pot settings but it limits how low you can set the bass. If you want to be able to set less bass then lower the value of the Bass Floor resistor. **Some *68 CDR* owners have jumpered around this resistor to allow lower bass settings so you may not want to add this resistor to your *65 DRRI*.**



Click on the image to see the full size, readable layout.

Step 1. Do the very simple Normal Channel Reverb Mod. This mod is exactly how the *68 CDR* sends the Custom (Normal) Channel through the reverb and tremolo effects and third preamp stage. You will also be able to jumper the channels together after this mod for a slightly fatter tone. If you think you may alter the voicing of one of the channels then I recommend you do the robrob Normal Channel Reverb Mod instead to add reverb and tremolo to the Normal Channel. The robrob Mod retains the Normal Channel's coupling cap so you can change its value to alter the Normal Channel's voice. For the 68 CDR style mod simply connect the top of Resistors R23 & R11 with a jumper wire and clip or remove cap C5 (both mods upper left in layout above).

Step 2. Change the Negative Feedback Resistor R64 to 1.5k or do the 3-Way Negative Feedback Switch Mod. The 3-Way mod has an 820 ohm and a 1.5k NFB resistors so you can select normal *65 DRRI* feedback or no feedback or *68 CDR* feedback.

Step 3. Remove or clip a leg of the Vibrato Channel Bright Cap C10 located next to the Vibrato Volume pot. You could also put the cap on a switch. Use a SPST mini switch to break the connection between the Bright cap and Volume pot center terminal.

Step 4. Modify the Normal Channel tone stack to match the *68 CDR* Custom Channel. Change the Mid capacitor C4 to .022uF.

The *68 CDR* schematic calls the 18k 1/2 watt **Bass Floor resistor R72**. To insert the resistor you must cut the trace on the pot control board that runs from the Bass pot to the intersection of the 6.8k Mid resistor R9 and the C4 Mid cap. Then bridge the cut trace with the 18k resistor. If the 18k resistor limits your minimum bass setting too much you can try a smaller value resistor like a 12k. Some 68 CDR owners have removed this resistor so **I do not recommend adding the R72 18k Bass Floor resistor to your 65 DRRI**.

Speaker Suggestions for the AB763

Weber 12F150 Vintage American Voice, 12", ferrite magnet, 1.5 inch voice coil, light dope $114. **Weber's and my recommendation** for the blackface amps that use 12" speakers. **10F150** is my recommendation for blackface amps that use 10" speakers, $94. Both require a long, 50 hour break in unless you have Weber do their **free break in** service.

Weber Ceramic Signature 10" and 12" for the budget minded. Some actually prefer the Sigs to the more expensive 10F150 and 12F150. Four Sig 10's in a *Super Reverb* sound absolutely glorious.

The *68 Custom Deluxe Reverb* comes with a British voiced 12" Celestion G12V-70 and the amp gets great reviews.

Eminence GA-SC64 Vintage American Voice, *"Tones of 1964 still ring true in this vintage voiced speaker by seasoned amp guru George Alessandro. Well balanced from top to bottom, the GA-SC64's warm, dynamic character lends itself to vintage amps as well as modern gain and distortion. The traditional build materials offer warmth, dynamics, low note articulation and proper distorted harmonic content layering."*

Eminence Cannabis Rex *"The Eminence Cannabis Rex guitar speaker lets your laid-back style come through. Clean and full, with lots of body and sparkle. Smokey smooth with high-end definition. Country, Jazz or Classical guitarists take notice."*

JBL D120F Loud, clean, efficient but heavy and adds some mids the amps needs. Best defense against ham fisted drummers. You can always find a blown one and have it reconed.

Celestion 12M Greenback *Warm and Woody with relatively early breakup*.

Eminence GB128 Vintage British Voice, *"The Eminence Legend GB128 guitar speaker helps clean up your act. Cleaner **British voiced** tone with a full low end, warm, throaty mids and a very open top end. Turn up the volume and turn back the clock."*

The **WGS ET65** is an amazing replacement speaker for Fender amps even before you consider its low low price. *"The ET65's creamy lows blend with tight midrange and sparkling highs for some of the best tones ever created. This speaker is for classic rock, country, and blues. Upgrade from your Celestion™ G12-65."*

Preamp Tube Tweaks

Pull the Normal Channel preamp tube V1 and use the Vibrato Channel. Of course this assumes you don't use the Normal Channel because tube V1 is the Normal Channel first and second preamp stages. Pulling V1 changes the amp circuit because the V1B and V2B triodes share an 820 ohm cathode resistor. Two triodes sharing an 820 ohm cathode resistor is the equivalent of each triode having its own 1.5k resistor. If you remove V1 then the V2B (Vibrato Channel second gain stage) preamp goes from normal center bias to a warm bias with an 820 ohm cathode resistor. In other words pulling V1 is exactly like changing the Vibrato Channel second preamp gain stage from a 1.5k cathode resistor to an 820 ohm. This warm bias **increases gain and makes creamy sounding asymmetric clipping more likely**. Removing V1 will also raise the plate voltage on all the preamp gain stages which adds a some gain also. Removing V1 works really well with hot boost pedals or even hot humbucker guitars.

Replace V1 or V2 with a 12AY7. You can go the opposite direction and reduce preamp gain by replacing the 12AX7 in V1 (Normal Channel) or V2 (Vibrato Channel) with a lower gain 12AY7. The 12AY7 was used as the first gain stage for many of the tweed amps and will offer up more clean headroom because its lower gain will reduce preamp distortion. This swap can really shift the distortion balance between preamp and power amp to favor power tube distortion when you combine it with the V6 phase inverter tube change as discussed in the next paragraph.

Try a 12AX7 in the V6 Phase Inverter for more power tube distortion. The 12AX7's extra gain will hit the power tubes with a hotter signal. This is a way to shift the AB763's preamp/poweramp distortion balance toward the power tubes. To give it a try just move the V1 12AX7 into the V6 socket and use the Vibrato Channel.

Replace the V3 12AT7 Reverb Driver tube with a lower gain 12AU7 to give you more usable room on the Reverb Control. The Reverb pot can be a little touchy with a usable range from 0 to 3 or 4. A 12AU7 won't push the reverb circuit as hard so the usable range can extend up to 5 or 6 on the dial and make dialing in just the right amount of reverb easier. The lower gain 12AU7 can also reduce reverb circuit noise.

Another option to tame the reverb level is to install a 7247 or 12DW7 tube in V4. These tubes are dual triodes but the A triode is a 12AU7 equivalent with lower gain than a 12AX7. The B triode is a 12AX7 equivalent so the V4B preamp stage stays at full gain. Decreasing the reverb recovery's gain makes the Reverb Control less touchy, somehow enhances the reverb tone and can decrease reverb noise.

Run 6V6 Power Tubes In 6L6 Amps

Running 6V6 power tubes in a big bottle AB763 will give you small bottle tone but with lots more power tube overdrive because the preamp is tuned to hit the phase inverter and power tubes harder than in the small bottle AB763s.

To compensate for the different power tube impedance we need to adjust the speaker impedance. Since the little 6V6s put out much less current they need a higher impedance load. For a big bottle amp with a 4 ohm output transformer secondary we need to connect an 8 ohm speaker. With a 2 ohm secondary we need a 4 ohm speaker or with an 8 ohm secondary we need a 16 ohm speaker.

JJ 6V6S power tubes are good for 500 plate volts so they can handle 6L6 voltage but for normal 6V6 tubes you must do something to lower the plate voltage to keep from frying them. For amps with tube rectifiers you can plug in a lower rated rectifier like the 5R4 (less sag) or 5Y3 (more sag) to bring down the voltage. For amps with solid state rectifiers like the *Twin Reverb* and *Single and Dual Showman* you can plug the amp into a variac and turn down the amp's input voltage. A bucking transformer at its lowest setting may also do the job.

You may also need to adjust the bias after installing the 6V6 tubes. See this to measure and adjust the bias.

Run 6L6 Power Tubes In 6V6 Amps

You can get a different tone from the small bottle *Deluxe* and *Deluxe Reverb* amps by installing 6L6 power tubes but the power and output transformers can't supply all the extra current needed to actually get much more volume at the speaker. **Running 6L6 tubes will stress the transformers so I don't recommend it** but if you want to give it a try then you should make a change to the speaker load to compensate for the different power tube impedance. Just use a 4 ohm speaker with the *Deluxe* and *Deluxe Reverb's* 8 ohm secondary.

The amp may sound more sterile because the low voltage preamp and phase inverter are tuned to drive the 6V6 so you'll get less power tube distortion. If you plan to permanently swap to the 6L6 then I recommend you raise the preamp and phase inverter voltage to better drive the 6L6 power tubes.

Everyone that moves up from small bottle power tubes to large should **measure their 6.3v heater voltage** and make sure it's not 10% lower than spec (lower than 5.7v). The extra current draw of the big tubes can over tax some power transformers.

Keep an eye on your power transformer's temperature when running the big power tubes but be careful because the transformer can get hot enough to burn your fingers. I use an infra red no-touch thermometer to monitor amp component temperatures. Take a measurement with the normal 6V6 tubes so you have a baseline temp to compare to how hot it gets with the big tubes.

Replacing the GZ34 tube rectifier with a solid state rectifier like the plug-n-play Weber WS1 Copper Cap will supply the amp with a little more voltage and current to better drive the big 6L6 tubes.

You will probably need to turn up the bias to get the most from your 6L6 tubes. See this to measure and adjust the bias.

Run 2 Power Tubes in a 4 Power Tube Amp

Many push-pull amps designed to run 4 power tubes can be run with 2 power tubes to cut the output power in half. But since the output transformer was designed to load the current put out by 4 power tubes we need to make an adjustment on the speaker end to load 2 tubes properly. **Since 2 power tubes put out *half the current* of 4 tubes we need to double the speaker impedance so 2 tubes feel the same load as when 4 tubes are used**. For example your amp is designed to run an 8 ohm speaker with 4 tubes like the AB763 Blackface *Single Showman* so it will need a 16 ohm speaker when run with 2 power tubes.

To run two power tubes you pull the two outside power tubes, which in the *Twin Reverb* are V7 and V10. In the *Single* and *Dual Showman* the outside power tubes are V5 and V8 (tube numbering starts with the first preamp tube on the far right).

The plate voltage will be higher with only two tubes pulling current through the power supply so you may need to adjust the amp's bias. See this to measure and adjust the bias.

Run 2 6V6 Power Tubes in a 4x6L6 Amp

As stated above we need to up the speaker impedance when substituting 6V6 tubes in a 6L6 amp and we also need to up the impedance when running only 2 power tubes in a 4 tube amp so **we need to take two steps up in speaker impedance to run 2 6V6 power tubes in an amp designed for 4 6L6 tubes**. For an amp with a 2 ohm secondary we would need an 8 ohm speaker, a 4 ohm secondary needs a 16 ohm speaker and an 8 ohm secondary would need 32 ohms of speaker load (two 16 ohm speakers wired in series).

You must consider the power tube plate voltage when running 2 6V6 tubes. **With only two small power tubes pulling current through the power supply all the voltages in the amp will be higher than normal**. JJ 6V6S power tubes are good for 500 plate volts so they can handle the *Twin Reverb's* voltage but for normal 6V6 tubes you must do something to lower the plate voltage to keep from frying them. For amps with tube rectifiers you can plug in a lower rated rectifier like the 5R4 (less sag) or 5Y3 (more sag) to bring down the voltage. For amps with solid state rectifiers like the *Twin Reverb* and *Single and Dual Showman* you can plug the amp into a variac and turn down the amp's input voltage. A bucking transformer at its lowest setting may also do the job.

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You will probably need to adjust the bias when running two 6V6 tubes. See this to measure and adjust the bias.

Real World Voltages

Here's the voltages I measured on my bone-stock AB763 *Band-Master*:

AC Voltages

Wall: 125.4 Volts AC

Rectifier Input: 348VAC (Schematic lists the power transformer as 320VAC with 117v wall power)

Heaters: 7.1VAC Yes, that's too high, it should be 6.3VAC +/- 10% or 5.7v to 6.9v.

Bias supply tap: 61VAC

DC Voltages with 6L6GC Power Tubes biased to 67%

B+1: 465 with V5 plate 463, V6 plate 463 (Schematic lists 440v for B+1, plates and screens)

-48 bias on both grids for a bias of 67% of max dissipation.

B+2: 466 with a .65v drop across 470 ohm screen resistors for 1.4 milliamps of screen current (Schematic

lists 440v B+2)

B+3: 455 with 237, 240 on phase inverter plates (Schematic lists B+3 of 430v, plates 225v)

106v at the phase inverter cathode-tail junction (Schematic lists 105.5v)

B+4 430 with V2 plates 290, V1 plates 285 (Schematic lists B+4 of 375v, plates 275v)

Voltages Using a Bucking Transformer

After getting these voltages I powered the amp through a **bucking transformer** to bring down all the voltages.

Wall dropped from 125.4VAC to 111v.

Rectifier input dropped from 348VAC to 309v.

Heaters dropped from 7.1VAC to 6.2v.

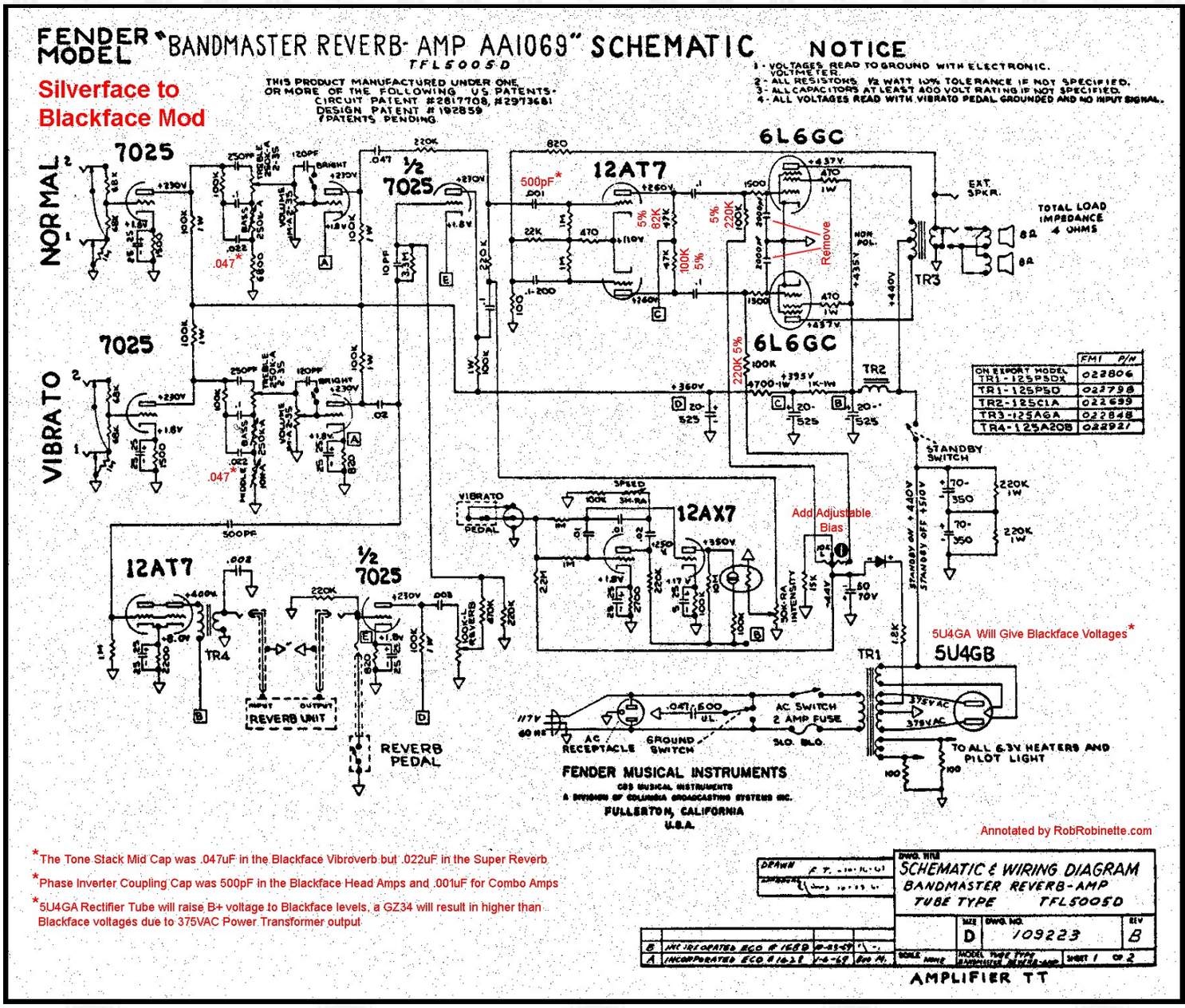
B+1 lowered from 465v DC to 416v, 49 volts lower than with straight 125.4 VAC wall power.

I highly recommend you run your older amps through a bucking transformer. The amp and tubes will last longer and sound more authentic.

"Blackface" a Silverface Amp

I blackfaced my 1969 AA1069 silverface *Bandmaster Reverb* (TFL5005D) into a 1963 AB763 blackface *Vibroverb* with just a few mods shown in red below. The .047 Bass cap, Phase Inverter Plate Load resistors and Power Tube Grid Leak resistors are the most important to tone.

All the Differences Between the AB763 Vibroverb and AA1069 Bandmaster Reverb



*The Tone Stack Mid Cap was .047uF in the Blackface *Vibroverb* but .022uF in the *Super Reverb*. I'm a fan of the .022uF Mid Cap.

*Note the Phase Inverter Coupling Cap is shown in red with an asterisk because Blackface head amps used a 500pF coupling cap and the combo amps used a .001uF like this silverface amp. Fender used the smaller cap to trim some bass because the matching blackface extension cabs were closed back and had extended bass response. If you play mostly clean or use mostly open back cabs the .001uF cap would probably be best, but if you play a lot of overdrive the 500pF might be best for a tighter overdrive tone.

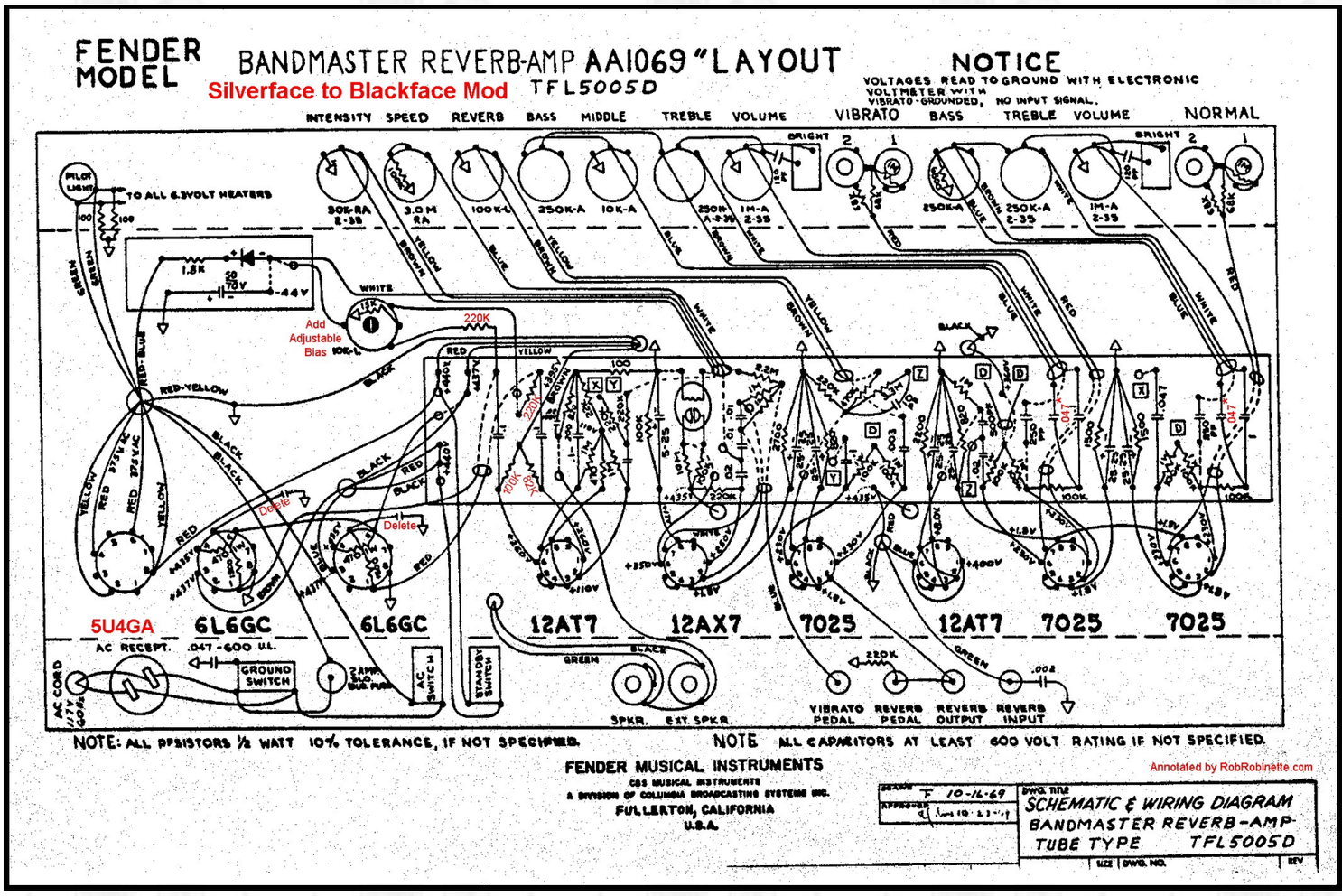
*Using a 5U4GA Rectifier tube will bump the B+ voltage up to AB763 *Vibroverb* levels. Using a GZ34 like the *Vibroverb* will boost the B+ well beyond the *Vibroverb* levels because the *Bandmaster Reverb's* Power Transformer puts out 15 more volts than the *Vibroverb*.

Replace the Phase Inverter Plate Load resistors with 82K (V6A) and 100K (V6B) 1/2 watt rating) resistors.

Replace the Power Tube Grid Leak resistors with 220K 1/2 watt resistors.

Remove or clip the Stability Caps connected to the Power Tube Grids (pin 5).

I recommend keeping the AA1069 Bias Balance circuit and just add a 25k Bias pot so you have both adjustability to set the bias and a Bias Balance pot to match bias between the two power tubes.



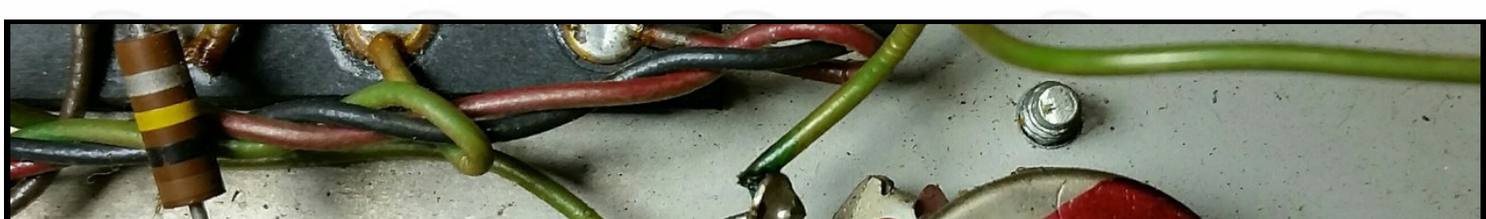
The AB763 *Vibroverb* came with an 8 ohm output transformer with 820 / 47 ohm negative feedback circuit. The *Bandmaster Reverb* uses a 4 ohm output transformer with 820 / 100 negative feedback circuit. The different NFB circuit compensates for the 4 ohm transformer's lower output voltage. As long as the *Bandmaster Reverb* is connected to a 4 ohm speaker load (typically two 8 ohm speakers) the outcome is the same.

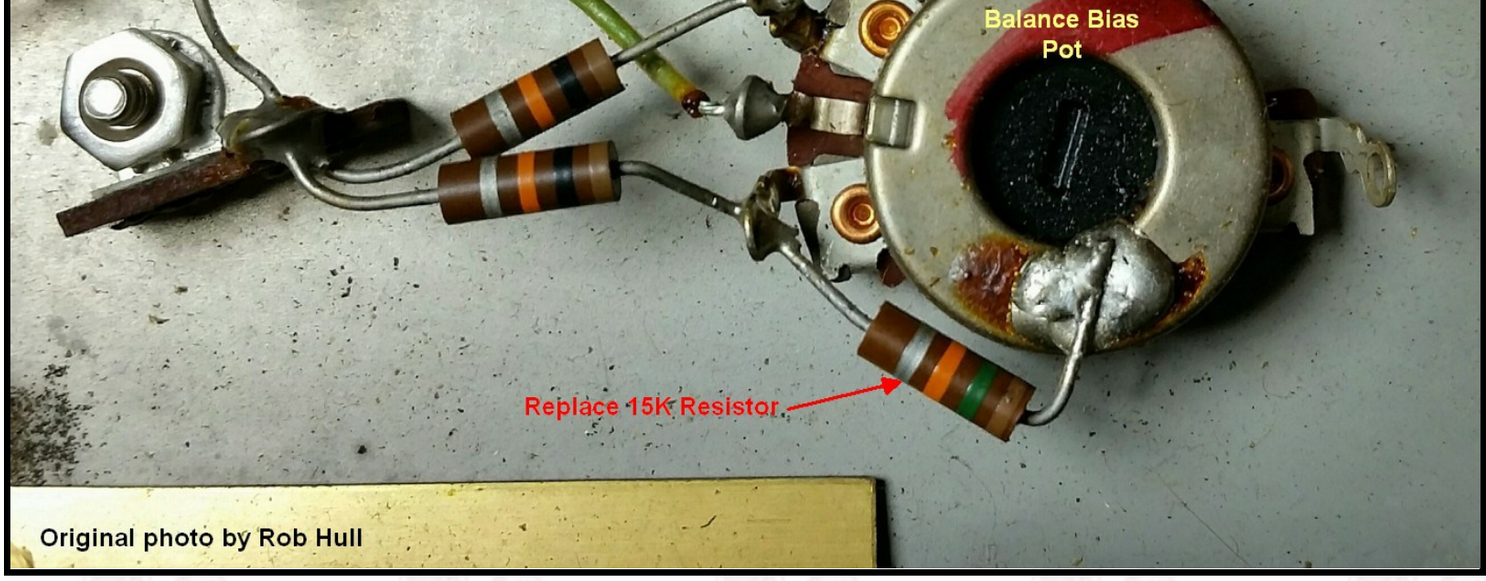
All of the AB763 mods on this webpage apply to silverface amps that have been blackfaced.

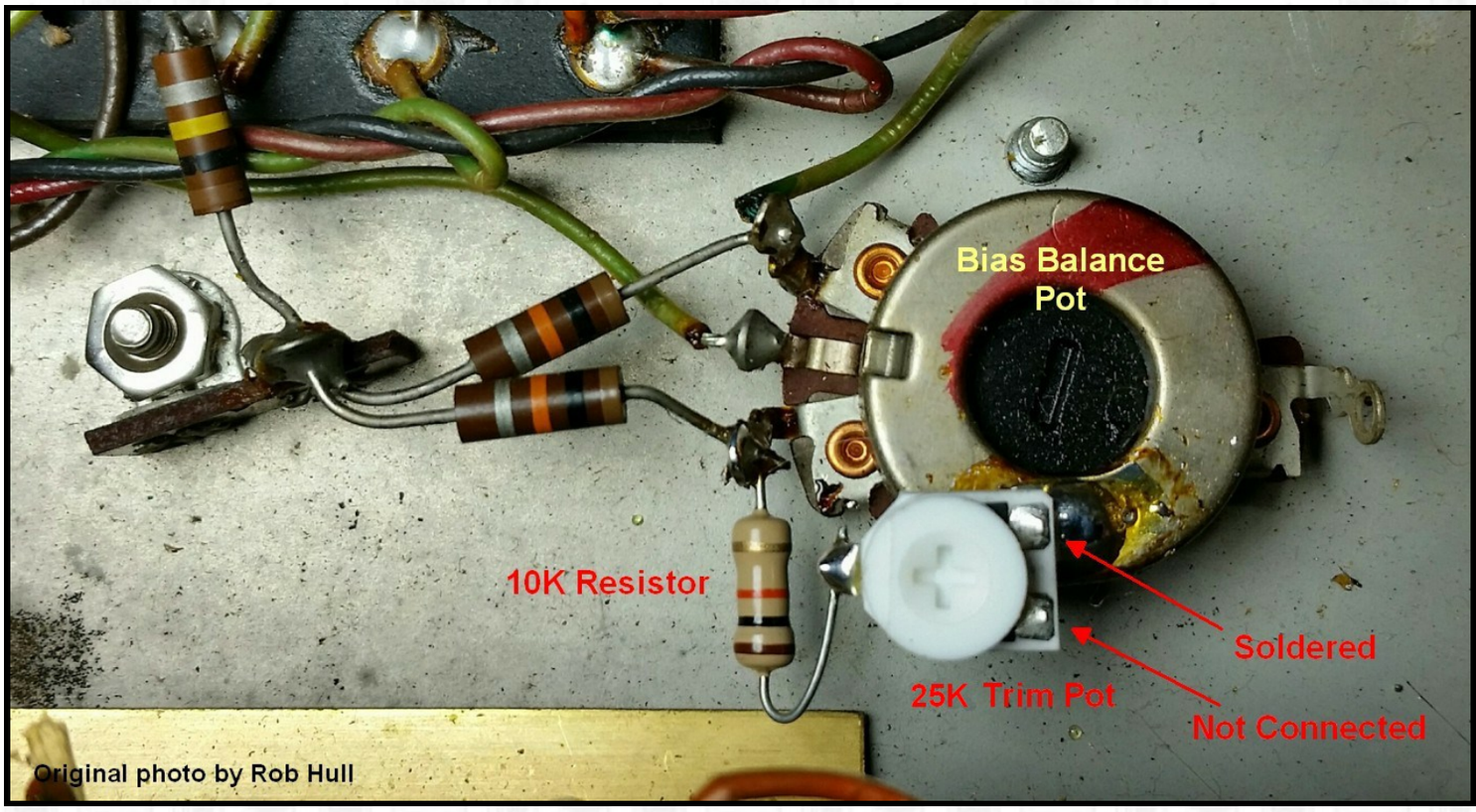
Convert Bias Balance to Adjustable Bias + Bias Balance

This applies to silverface amps with a Bias Balance pot but no bias level pot. Simply replace the 15K resistor that's soldered to the original Bias Balance pot's back with a 10k 1/2 watt resistor and a 25k trim pot. The Balance pot still acts to balance the bias between the power tubes but the trim pot will adjust the bias level of all the power tubes. Turning the trim pot to reduce resistance will increase the bias current and make the bias hotter. Mod and photos by Rob Hull.

Original Silverface Bias Balance Circuit



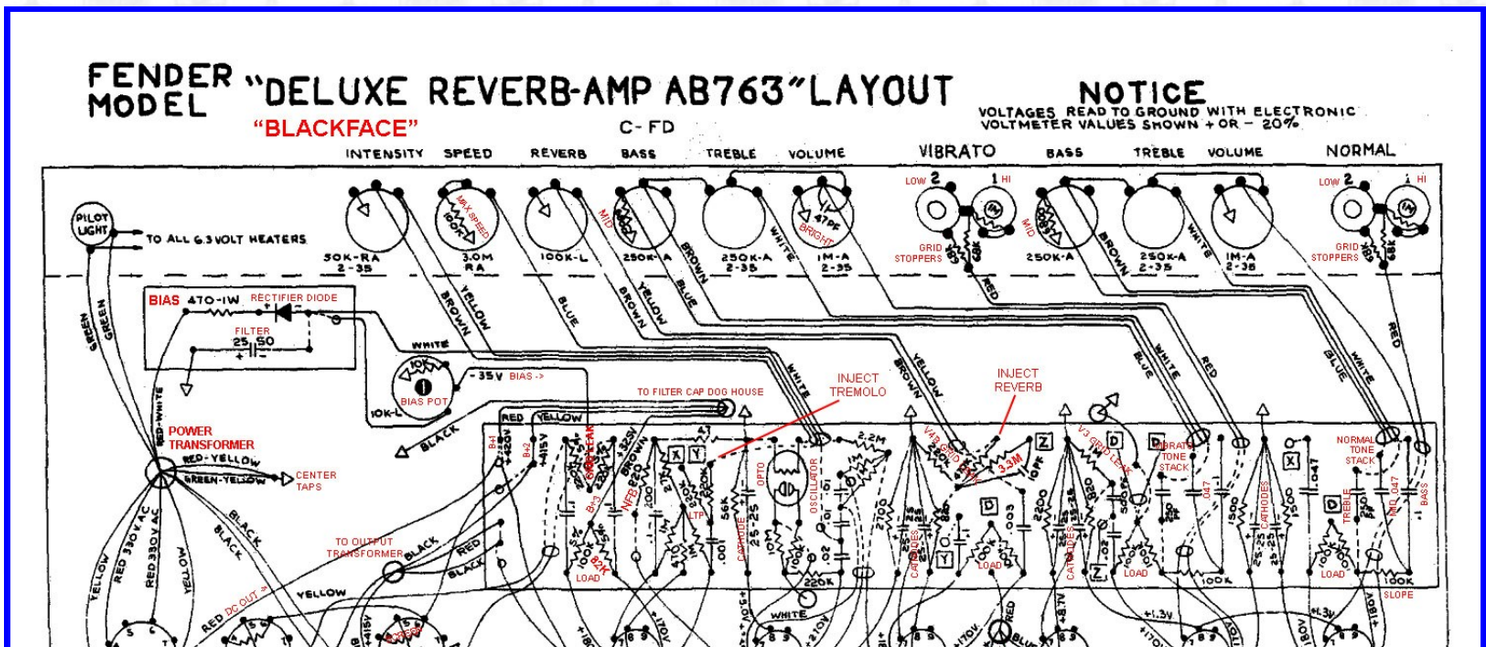


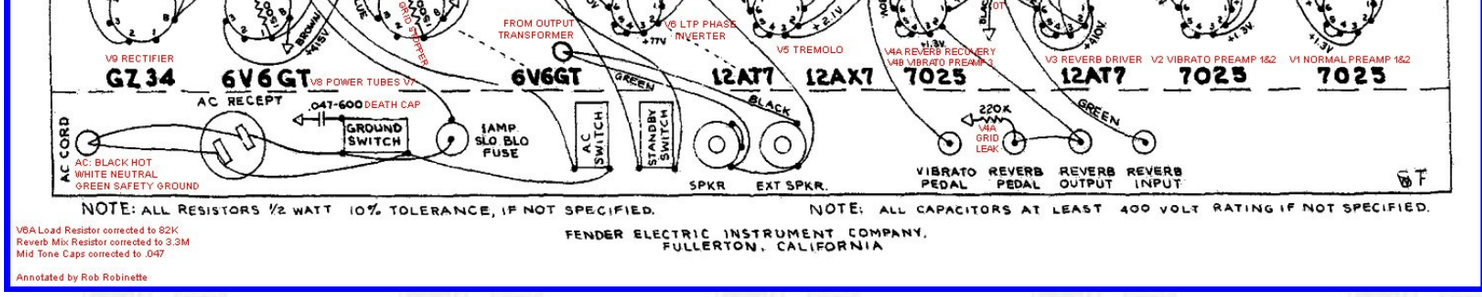


Replace the original 15k resistor with a 10k resistor + 25K trim pot. Set the trim pot to maximum resistance before installing so the bias will be set to coolest. ***You must bias the amp after this mod****. The trim pot's upper right terminal is soldered to the back of the bias pot for a ground connection. The trim pot is wired as a variable resistor with the trim pot's lower right terminal not connected to anything.*

Watch closely for power tube red plating when you start the amp up after this mod in case you set the Bias trim pot incorrectly. **You will need to bias the amp after this mod. See this for info on biasing an amp.**

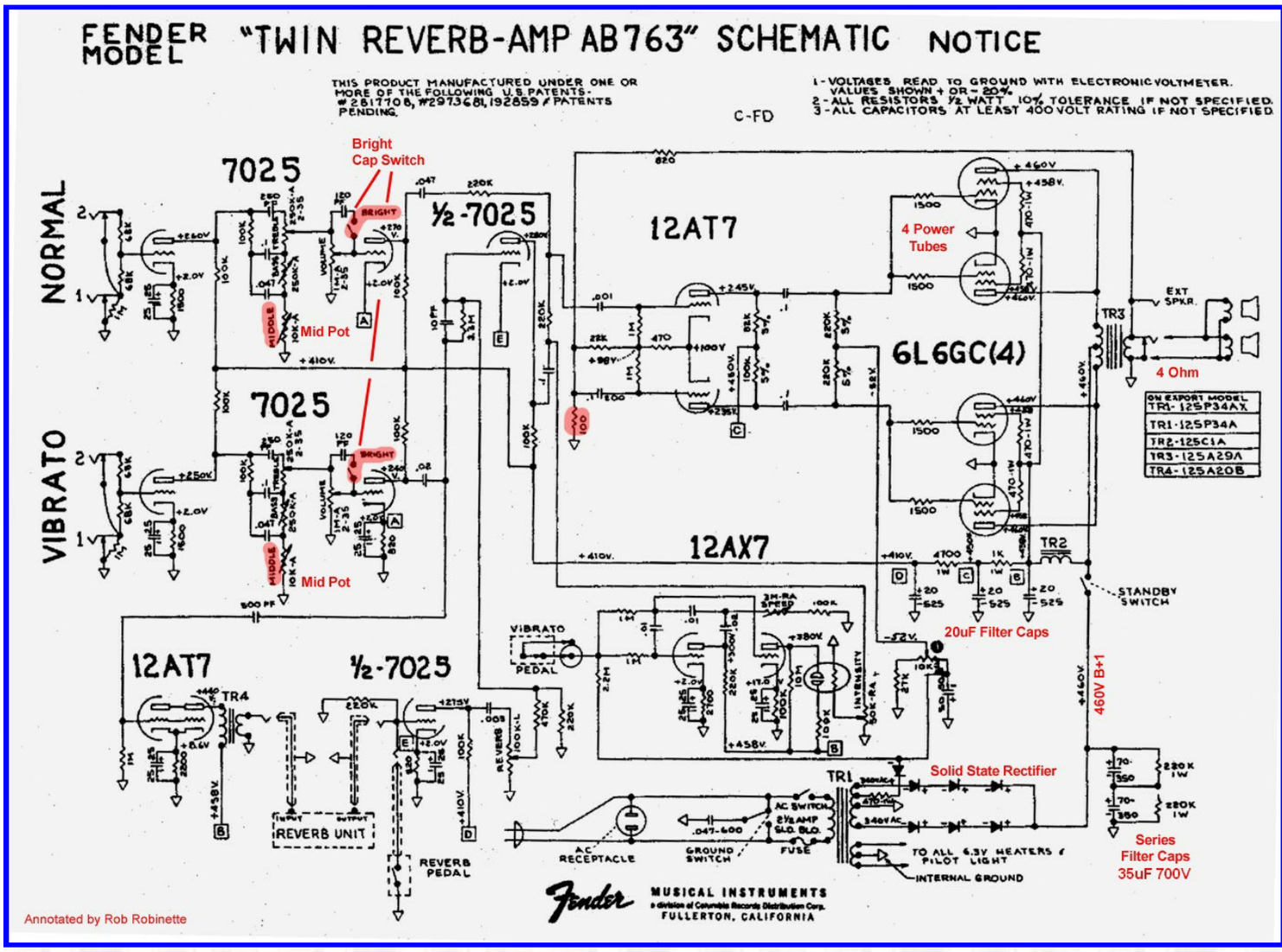
AB763 Annotated Layout





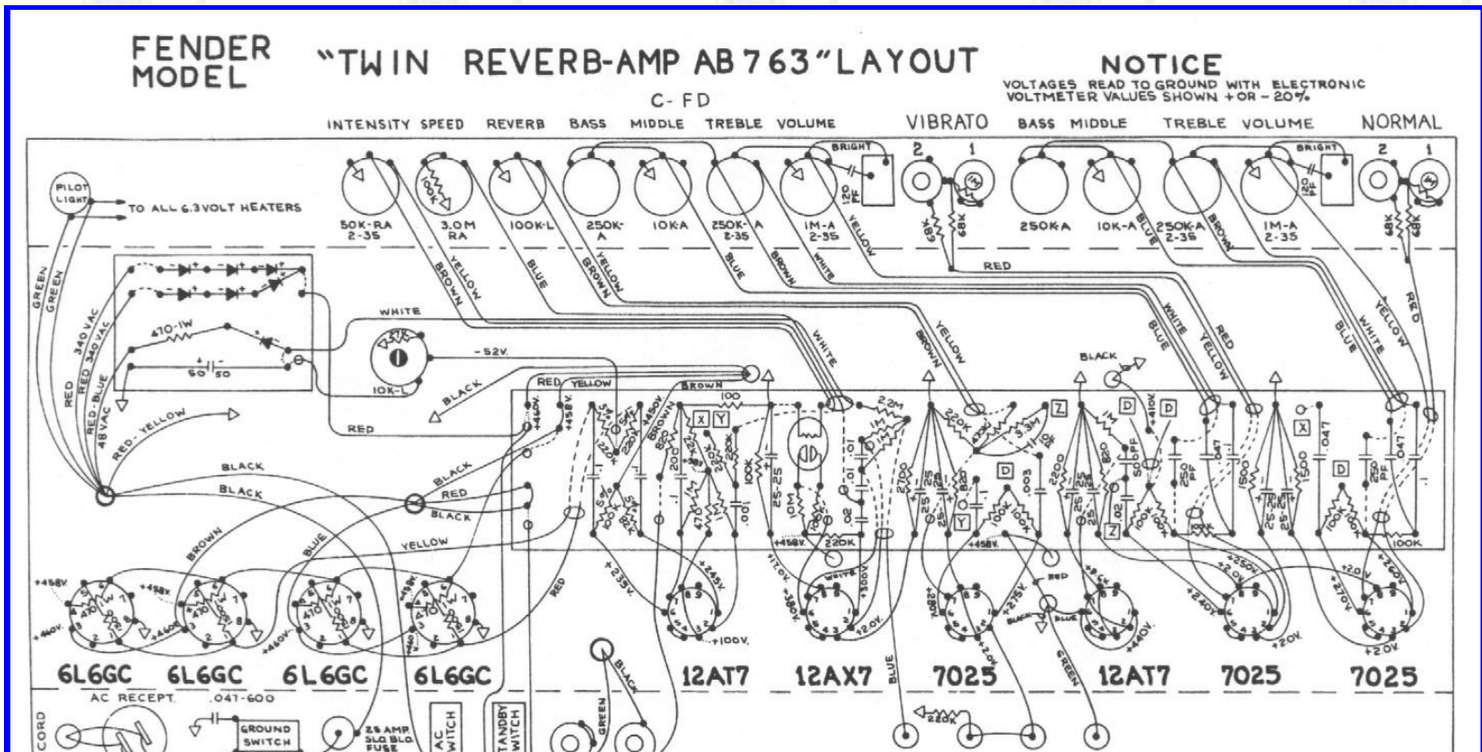
Click the image for the full size layout.

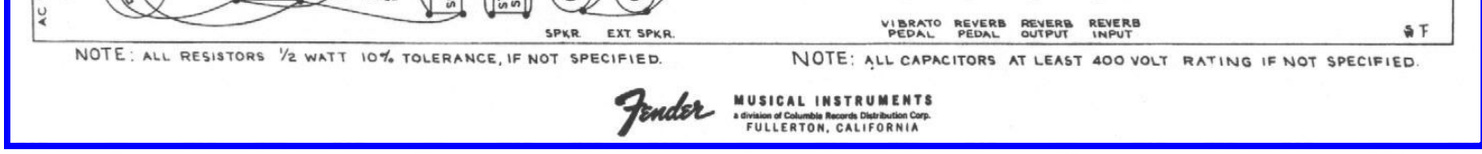
AB763 Twin Reverb Schematic



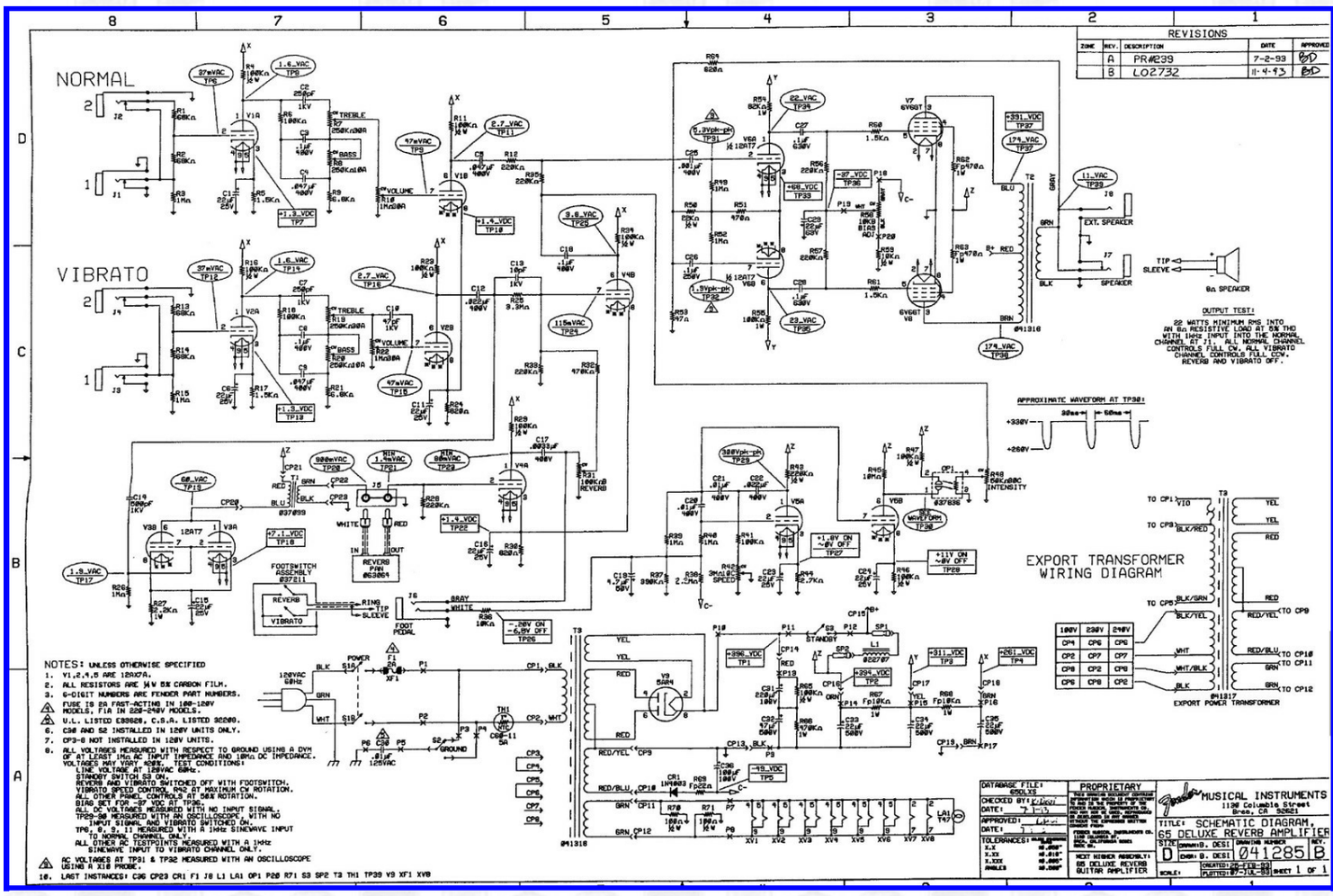
Some of the major differences between the Twin Reverb and Deluxe Reverb are highlighted.

AB763 Twin Reverb Layout



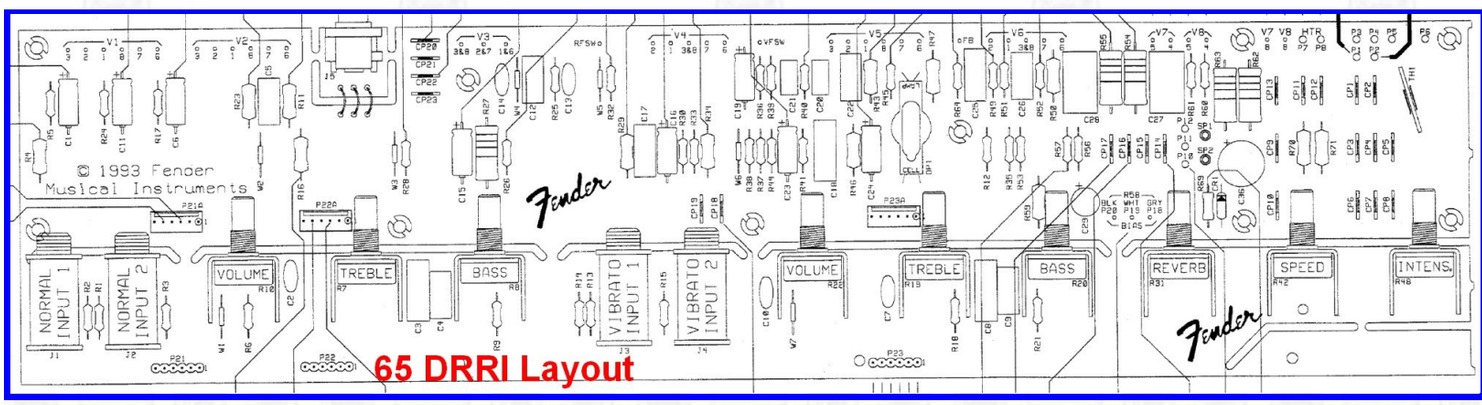


65 Deluxe Reverb Reissue Schematic



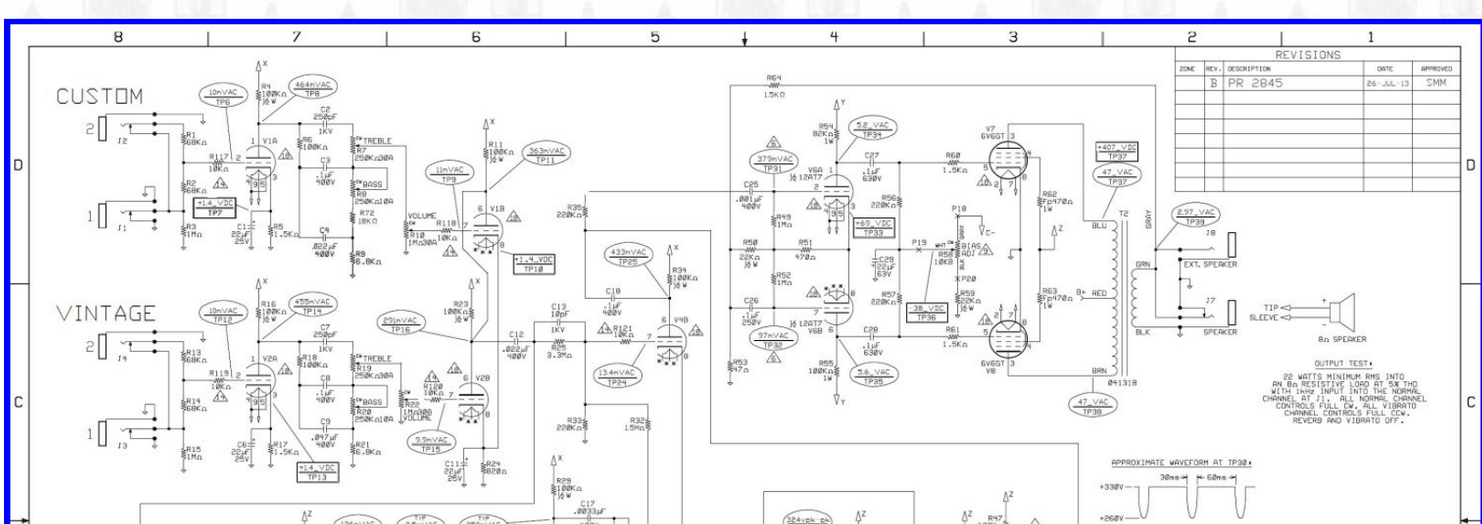
The 65 DRRI has the AB763 circuit on a PCB. Click the image for the full size schematic.

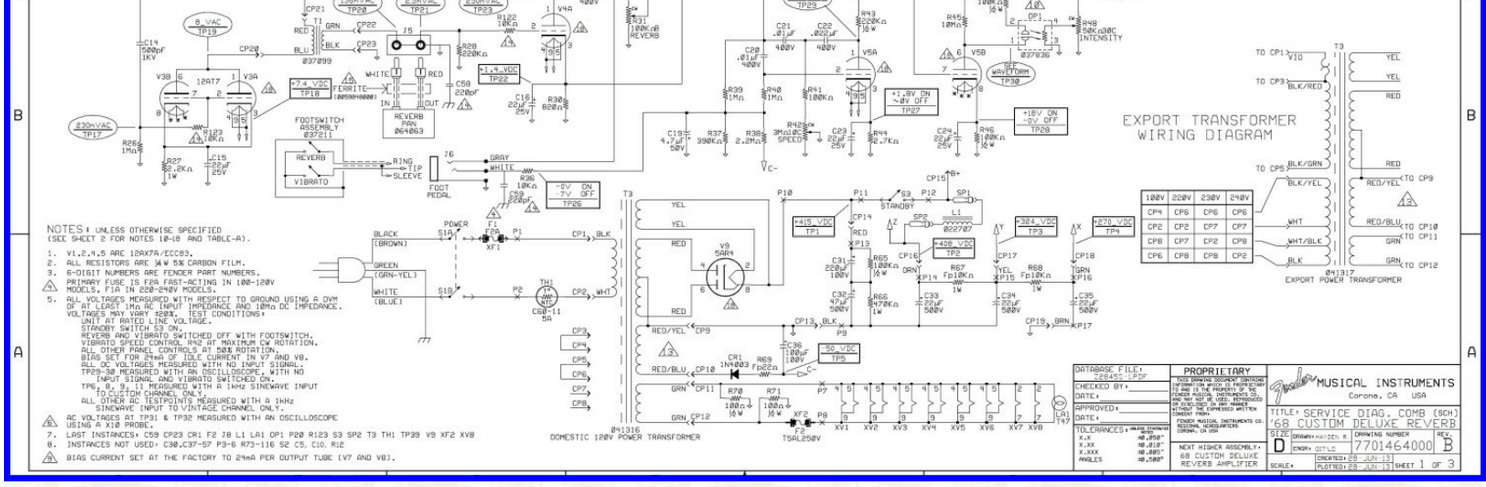
65 Deluxe Reverb Reissue PCB Layout



Click the image for the full size layout.

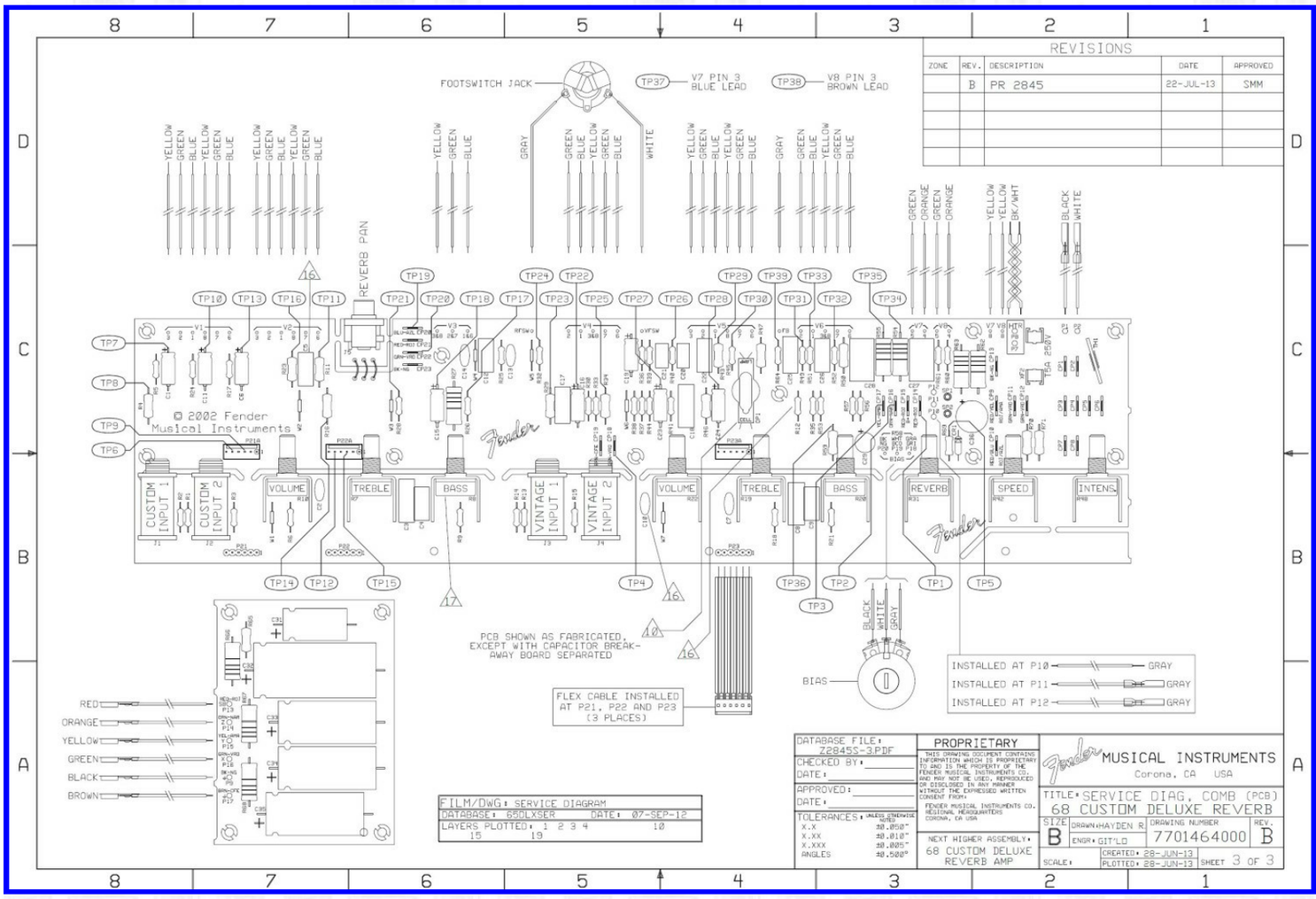
68 Custom Deluxe Reverb Schematic





The 68 CDR is not a silverface amp, it is an almost exact copy of the 64 Deluxe Reverb Reissue with just a few valuable tweaks. Click the image for the full size schematic.

68 Custom Deluxe Reverb PCB Layout



Click the image for the full size layout.

For more info on the AB763 circuit see ***How the AB763 Deluxe Reverb Works****.*

This webpage is available in PDF form: ***AB763 Modifications.pdf***

By Rob Robinette

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[Amp Voicing] [Overdrive] [Reverb] [Build an Amp] [Amp Startup] [Troubleshooting] [Deluxe Micro]
[Bassman Micro] [Champ Micro] [SixShooter] [VHT Mods] [Android Bias Calc] [LTSpice] [Tele Mods]