

The Blue Guitar

Peavy Classic 50 Mods

Overview

Although the schematic for the Peavy Classic 50 is almost identical to that of the Classic 30, the construction is quite different, with much larger transformers, higher quality caps and a much sturdier chassis. The main complaint heard about the Classic 50 is that the OD channel is too harsh. For this article, I adapted several of the mods I developed for the Classic 30 to the Classic 50-410 (the newer version which includes the FX loop). Please refer to the article on the Classic 30 for a fuller discussion of some of these mods. [Click Here for c30_origmod.pdf](#)

General Information on mods for Classic 50

*Warning! Tube amps have high voltages inside of them, even when the amp is unplugged! The large power supply filter capacitors can be safely discharged using a well insulated test probe connected to the chassis ground through a 10K resistor. Unplugging the amp and turning on both the power and standby switches will allow **most** of the charge to be dissipated through the transformers...*

To remove the Classic 50 from the cabinet, first unplug the 16 ohm speaker cable and reverb plug and then remove cable strap holding the power cord. Remove the tweed back panel for access to the 2 sheet metal screws that secure the chassis to the sides of the cabinet. The chassis is now held in only by the 2 long machine screws at the top of the cabinet. The bulk of the weight is on the left side looking from the rear; be sure to support the chassis well when you remove the 2 machine screws.

With the chassis out, remove the tube covers and tubes. There are 4 interconnected circuit boards which can be easily removed from the chassis. Label and unplug the 3 molex and other 2 plugs from the output board. Remove the 8 screws holding the preamp and output boards. Label and unplug the various molex and other plugs on the main circuit board. On my amp I had to cut the 3 cable ties securing the normal/lead switch leads to the other cables. Remove the 3 jack nuts securing the footswitch/FX loop board. Remove the 9 knobs and pot nuts, and 2 jack nuts for the main circuit board, and take out the machine screws holding the main board to the chassis.

In reassembling the amp after doing the mods outlined in this article, you can wrap the white normal/lead switch leads around the shielded cable a few times in lieu of cable ties. You may also want to add a dab of silicon to the high voltage B+ plug going to the output board (which is wedged against one of the shielded cable connectors).

Tone Cap Mods for the Classic 50

Modify the tonal response of this amp by replacing the tone caps!

By changing the values and style of capacitors used in the tone circuitry of the Classic 50, the tonal

response can be improved. Most amp builders and connoisseurs prefer Sprague-style Orange Drop caps for the midrange and bass caps; many of them likewise prefer silver mica caps for the treble caps.

As for the values and varieties of the stock tone caps, Peavy uses a 270pf cap for treble and a pair of .022uf "tan glob" caps for midrange and bass. Replacing them with higher quality metallized polypropylene and silver mica caps will improve the sound noticeably.

For this mod, I recommend replacing the .022uf bass cap (C17) with a .022uf Orange Drop-style cap for smoother OD tones however a .047uf cap will improve the bass response for more Fender-like clean tones. You could add a switch to bypass the .022uf cap on the board with a .033uf cap (wired similar to the "shift" switch outlined below) to allow you to toggle between those two sounds. The .022uf midrange cap (C19) should be replaced with a .022uf Orange Drop. I put in a 270pf silver mica cap in place of the 270pf tubular ceramic treble cap (C14- it looks like a resistor but with a green body instead of a tan). However, the stock treble cap can be used if you can't find a silver mica cap.

The tone caps are located behind the middle and treble controls (the 3rd and 4th pots from the right if the input jacks are on your left). The midrange cap (C19) is the .022uf "tan glob" cap behind the "Middle" control; to replace it with a .022uf Sprague Orange Drop cap you must form the leads so that it will fit behind the pot. The treble cap (C14) is the 270pf green tubular cap located behind the "Treble" control on the right; replace this cap with a 270pf silver mica cap first. The bass cap (C17) is the .022uf "tan glob" cap behind the "Treble" control on the left; to put in a Sprague Orange Drop for the bass cap involves bending the leads very radically and you should insulate them with 1/16" heat shrink tubing so that they don't short out. I placed the cap next to the larger electrolytic cap and put a dab of hot melt glue on it so that it wouldn't vibrate at loud volumes. Incidentally, R23 (the 68K slope resistor for the tone circuit) is located between the "Middle" and "Treble" controls if you want to try experimenting with different values.

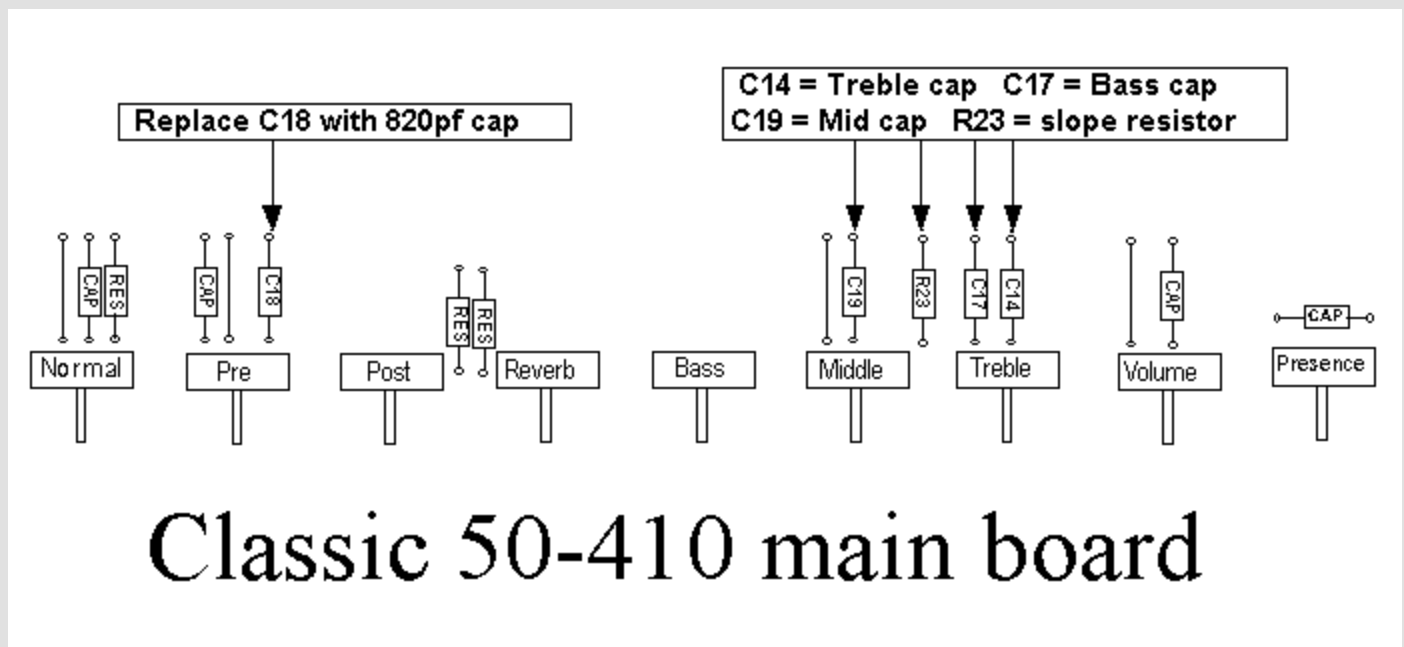
If you wish to add a "shift" switch (see the section below) you should solder in the 750pf cap and the two lengths of shielded cable before installing the bass cap. Once the bass cap is in place, you will not have access to the treble cap, although the leads could alternately be attached to the CW terminal of the treble pot and the "treble pot end" of the slope resistor.

Overdrive Channel input mod for the Classic 50

Replace C18 cap to tone down the harshness of the OD Channel.

One common complaint concerning the Classic 50 is that the Overdrive Channel is too harsh-sounding. In examining the schematic, I noticed that the signal from V1A is routed first through a .047uf coupling cap and then sent to both the Normal and OD channels. The Normal channel gets its signal from a .001uf cap paralleled with a 680k resistor, while the entire signal going to the OD channel is routed through a 470pf cap (C18)! A cap of that value will allow mainly treble and higher midrange frequencies through, and effectively blocks most of the low frequencies from V1A.

To reduce the harshness of the OD channel, I recommend replacing C18 with a 820pf silver mica cap. This cap is located behind the OD channel "Pre" gain pot (with the input jacks on your left, this pot is the second from the left). There are 2 tubular caps (like a resistor, but with a green body) behind this pot; C18 is the cap to the right of the jumper. Incidentally, the cap on the left is C24, another 470pf cap which bleeds off some of the highs to ground from the "Pre" gain pot wiper; you could try replacing this with a higher value to further reduce the harshness of the OD channel. (I didn't try that mod so I can't recommend it.)



Click here for Hi-Res image: [c50main1.gif](#)

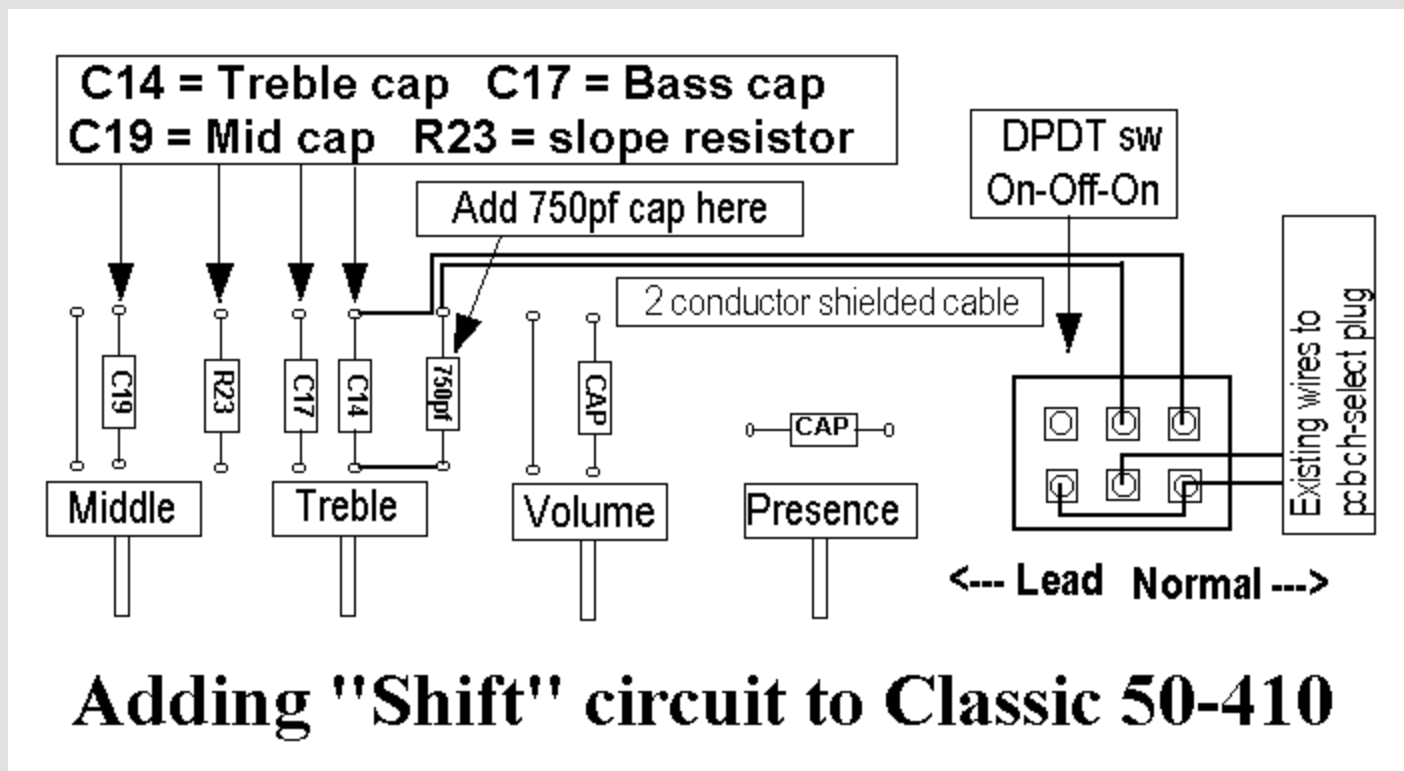
Adding Shift circuit to the Classic 50

Further modify the tonal response by selectively dropping frequency response curve one octave.

I had wanted to add this circuit to the Classic 50 but really didn't want to drill a hole in the chassis for another switch or try replacing one of the pcb-mount controls with a push-pull pot. Finally the perfect solution came to me: replace the 2 position SPST Lead-Normal channel selector switch with a 3 position on-off-on DPDT toggle switch. With this setup, the center off position is the Normal (or "Vintage") channel, the "Lead" position is the OD channel with Shift engaged and the "Normal" position is the OD channel without the shift. To use the Vintage channel with Shift you need to plug in the footswitch and set the toggle switch to the "Lead" position. (The footswitch has no effect if the toggle switch is set to the center off "Vintage" position.)

The shift circuit uses a 750pf cap in parallel with the 270pf treble cap to drop the frequency response curve down about an octave for more midrange and less treble, and boost the overall level 1 or 2 dB. As with other small value audio caps in this circuit I recommend using a silver mica cap. For a more pronounced shift, a larger value cap could be used (1000pf to .0015uf) although the higher values tend to flatten out the frequency response curve. I prefer the 750pf because the sound retains much of its character.

Although it might be easier to mount the 750pf cap on the new DPDT switch, I would recommend locating the cap close to the circuit board to reduce noise from the power transformer (which is right next to the Channel Select switch). Use 2 conductor shielded cable with the ground soldered to the pot case, and the two conductors wired as indicated below:



Mods to the Preamp tube board

Replace C4 cap and R6 resistor to tone down the harshness of the OD Channel. Replace C1 and C2 caps with polypropylene caps.

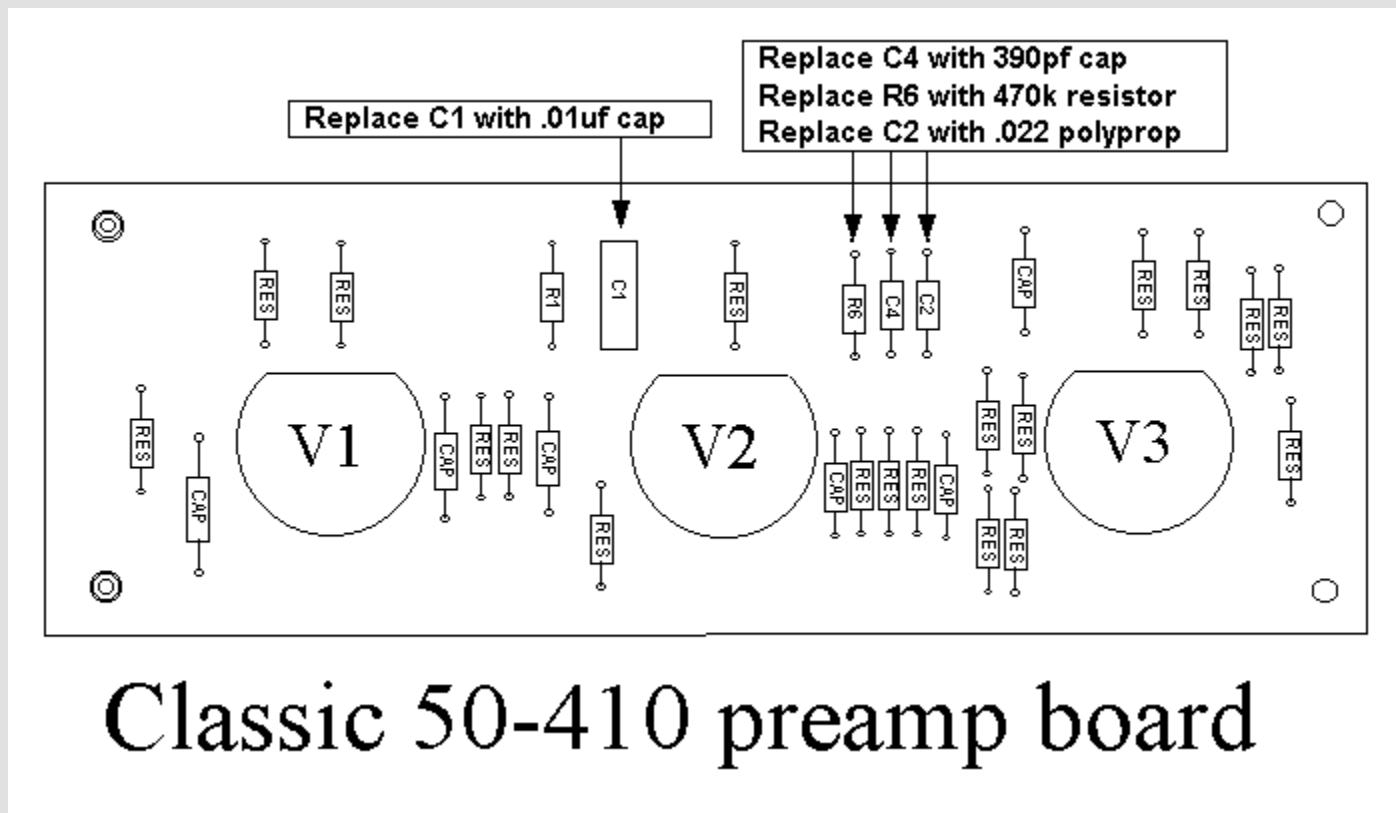
Further down the OD channel circuit, the .001uf coupling cap between V2A and V2B is followed by a 470k resistor (R6) paralleled with a 470pf cap (C4), which comprise an RC network which tunes the frequency response. I recommend replacing C4 with a 390pf silver mica cap, and R6 with a 470k 1/2 watt resistor. With the other mods outlined here, those values give a tone which is bright enough for blues, yet has a stronger bottom end; the bass and treble controls work well to fine-tune your sound with these values.

These two components are located between the V2 and V3 tube sockets on the preamp board. With the ribbon cables facing down, V2 is the middle socket and V3 is the socket to the right. At the 2 o'clock position from V2 there is a group of a resistor, a tubular cap, and a .022uf cap (C2, the coupling capacitor following V2B). As R6 and C4 are connected in parallel I suggest reversing their locations for better access if you decide to experiment with different values for C4. Although I replaced C4 with a 390pf one for a tone bright enough for blues, you may want to try out different values such as 680pf for a thicker more distorted tone for hard rock; a lower value for R5 will also produce a louder, thicker sound.

After doing the mods listed above, I still wasn't quite satisfied with the sound of my Classic 50-410. Although it now had some nice OD tones, the lead guitar sound just wasn't "in your face". To improve the "presence" of the sound I upgraded the two coupling caps in the OD circuit (C1 & C2) with Orange Drop polypropylene caps, increasing the value of C1 from .001uf to .01uf for a fuller, stronger signal. C1 is the white rectangular cap located immediately to the left and up from V2. C2 is the brown cap located to the right of R6 and C4. For less bass response you could keep the value of C1 at .001uf, but both of these caps should be upgraded with higher quality polypropylene caps.

Incidentally, once the amp is put back together you can remove just the preamp tube board to change its components for experimenting with different sounds. With the back panel and tube covers off (and

preamp tubes out), the 4 phillips head screws securing the preamp tube can be removed and the board pulled out for access. Because of this I was able to try out over a dozen combinations of R6 and C4 until I found the sound that I was looking for. You are encouraged to do the same if you are not 100% pleased with the sounds produced with the values I eventually settled on. (Send me an e-mail message with the values you decided on, along with the tubes you are using as well as the guitars and pickups played in addition to the style of music you play... I'll add a table at the end of this article to include any recommendations I get.)



Click here for Hi-Res image: [c50_pre1.gif](#)

Retubing

Check out my [Righteous Tubes!](#) page for the details on the latest preamp tube combinations which seem to work best for me (as I find better combinations, I will revise that page).

The Classic 50 uses 3 12AX7 preamp tubes, labelled V1, V2 and V3 from right to left as viewed from the rear of the amp. The C50 isn't a true 2 channel amp; the channel select switch adds in the 2 additional gain stages of V2, between the initial and final preamp stages of V1. V3 uses both stages for the driver circuit before the 4 EL84 output tubes.

As for which brands and styles of 12AX7 tubes that work best in the Classic 50, let us address the V3 driver tube first. If you are looking for clean guitar tones from the Normal channel, you will want to use a driver tube that is fairly transparent. I have found that the stock Chinese tubes that ship with the amp work well as driver tubes (although I feel that they are too harsh to use for V1 & V2). For an even better sound, check out a Golden Dragon 12AX7 or Ruby Tubes 7025STR: they are very clean and transparent tubes

with a little more gain than the stock tubes. The driver tube I finally settled on is a NOS GE 12AX7WA, which seems to me to be the cleanest and the strongest of all of these tubes.

The guitar signal goes directly to the first stage of V1 in all modes so its selection is very critical to the sound you are looking for. If you use the Normal channel a lot, you should choose a tube which sounds well in this mode. For crystal clarity (at the expense of lower gain), you can use a 5751 tube. I personally prefer the Yugoslavian EI 12AX7 tube which has a sweet warmth similar to a Mullard (or so I've heard). Alternately, the Sovtek 12AX7WXT+ works very well although its sound is a little bit harsher than the Yugo tubes and it is very similar to a vintage Telefunken. For V2 (the 2 gain stages added in overdrive mode), I prefer the Sovtek 12AX7WB, which has lower gain than the WXT+. It is considered to be a bit "muddy sounding" but I feel that it smooths out the tones generated by V1. This tube is bypassed in the normal mode, so you can try out different tubes here to decide what works best for you in the overdrive mode.

If you use the Classic 50 strictly in overdrive mode, you can try out higher gain tubes in all 3 positions, with one suggestion here. I had always thought of changing preamp tubes as being like changing spark plugs in your car: decide which brand and style works best for you and replace them all with the same type. In trying out different tubes, what I found is that if all tubes are the same, it exaggerates the tonal characteristics of that particular tube. Perhaps that is exactly what you are looking for, but you can generally get a fuller sound if you mix and match different tubes. You may want to bring your amp down to your local music store and see if they will let you try out different combinations of preamp tubes.

Note: the amp mods outlined in this article are optimized for the following preamp tubes: V1 (Yugo EI 12AX7); V2 (Sovtek 12AX7WB); V3 (NOS GE 12AX7WA).

Final notes on these mods

Other ideas I haven't quite figured out yet.

One mod I'd like to add is a Dan Torres design "dual stage master volume" control at the input of the output tubes. The existing master volume control is before the FX loop, which creates level problems with external processors as you turn the master volume down. With a 500K dual-ganged audio pot wired to the output from the driver tube, once the levels were set on the fx processor you could adjust the volume level up or down without having to readjust them. A further benefit of this mod is that the Classic 50 could be slaved to another guitar amp, and its volume could be adjusted with the dual stage master volume; without this mod, the C50 would be running at full volume.

Another mod I'd like to add is a switch to select between 2 values for the bass cap in the tone stack, although I don't have any great suggestions as to where to add the switch. A small push-button switch located between 2 of the controls might work or you could add a toggle switch on the hidden side of the chassis over the reverb plug and footswitch/FX loop jacks.

In Conclusion

Legal disclaimers, suggestions and parting comments.

In conclusion I thought I better issue any appropriate disclaimers. These mods are not endorsed by Peavy and will obviously void any warranty on your Peavy Classic 50. The values of caps and resistors I

recommend reflect my own tastes, but you are welcome to try other values. For the tone caps, you may want to experiment with different values, but I'd definitely recommend putting in a higher quality cap than the tan globs that Peavy uses. Many people consider the Sprague-style Orange Drop caps to be the best, although other polypropylene caps work well, too. Metalized polyester cap allegedly have a "woody" tone, although I haven't observed that myself.

For the OD channel input mod, you may want to try a cap larger than the 820pf cap I recommend, and you may want to try paralleling it with a resistor to increase the low frequencies. As for the mods to the preamp tube board, you can replace the 390pf silver mica cap I recommend with a 680pf cap for a "distortion plus" sound perhaps more suitable for modern hard rock. You may want to keep the stock value of .001uf for C1, in which case I found that 390k for R6 and 250pf for C4 worked fairly well.

The Classic 50 isn't the easiest amp to work on with its printed circuit board design, but with these mods as a starting point you may be able to fine-tune your amp to get the sounds you are looking for. Good luck.

Steve Ahola

January 22, 1998

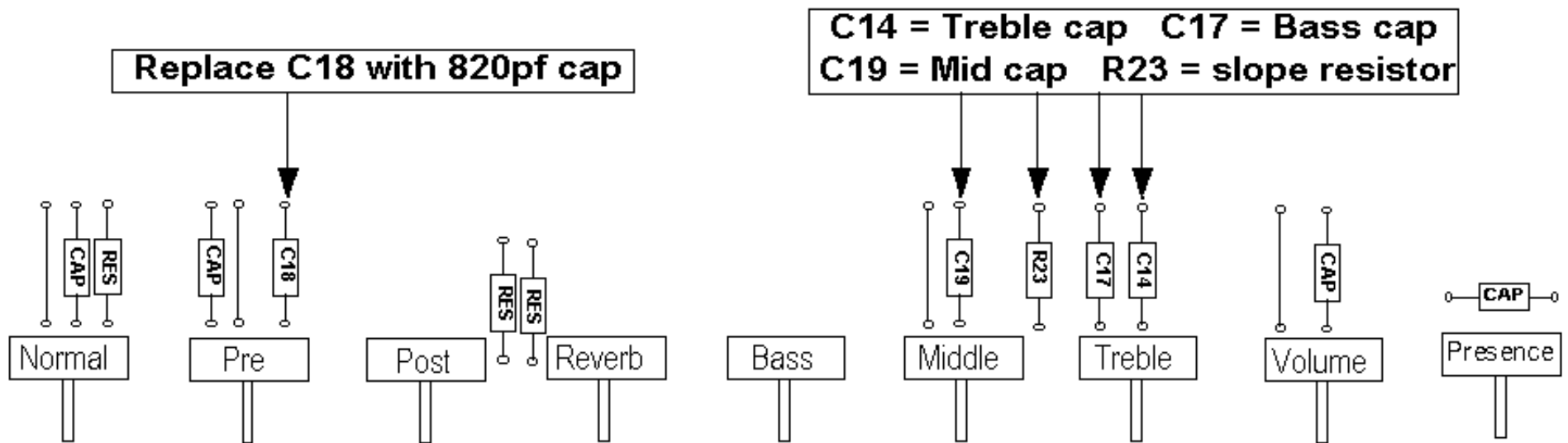
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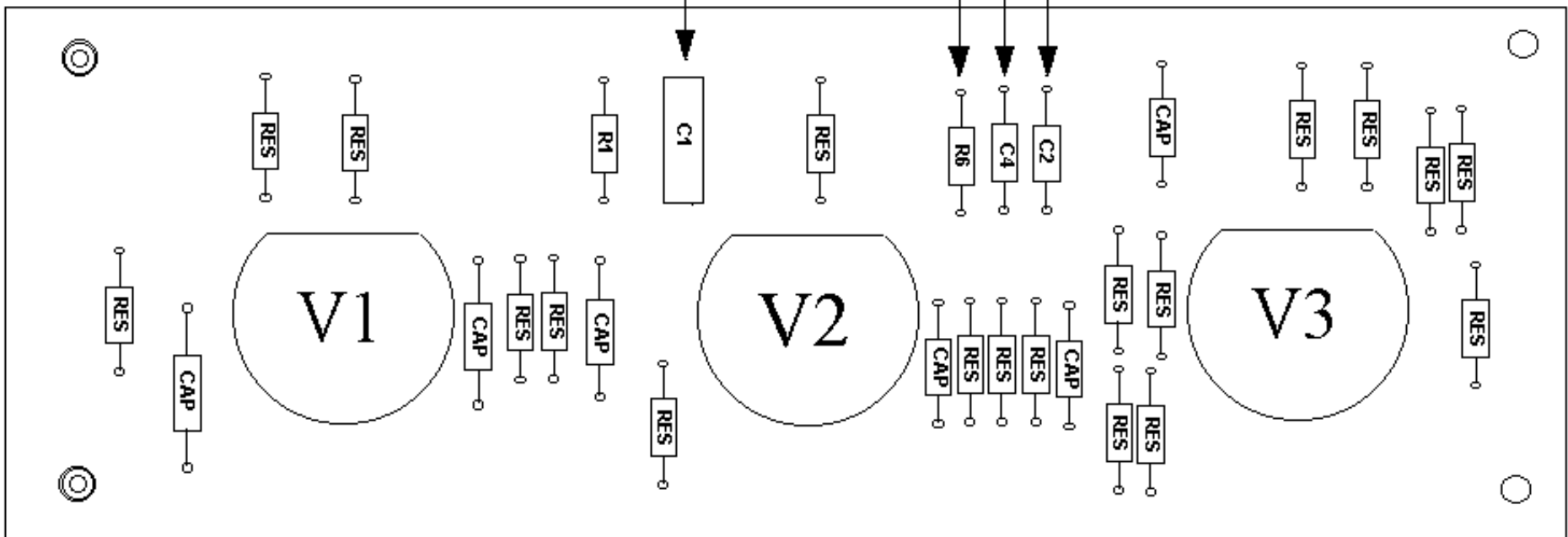
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Classic 50-410 main board

Replace C4 with 390pf cap
Replace R6 with 470k resistor
Replace C2 with .022 polyprop

Replace C1 with .01uf cap



Classic 50-410 preamp board