

G&L L2K Wiring Mods

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1. Introduction

There are a number of different wiring mods provided in this document. All of these wiring mods are based on modification of the wiring of the parallel / series switch. This is a 4-pole double-throw (4PDT) switch. This means the 4PDT assembly has four electrical switches (4 poles) on it that switch from one point to a second point (double throw). With the purchase and installation of a 3-position 4PDT on-on-on switch, it is possible to add a single coil option along with the stock parallel and series options. The 3-position 4PDT switch is a drop-in replacement for the stock 2-position 4PDT switch (it looks exactly the same). The only difference is that there are three unique switch positions rather than two.

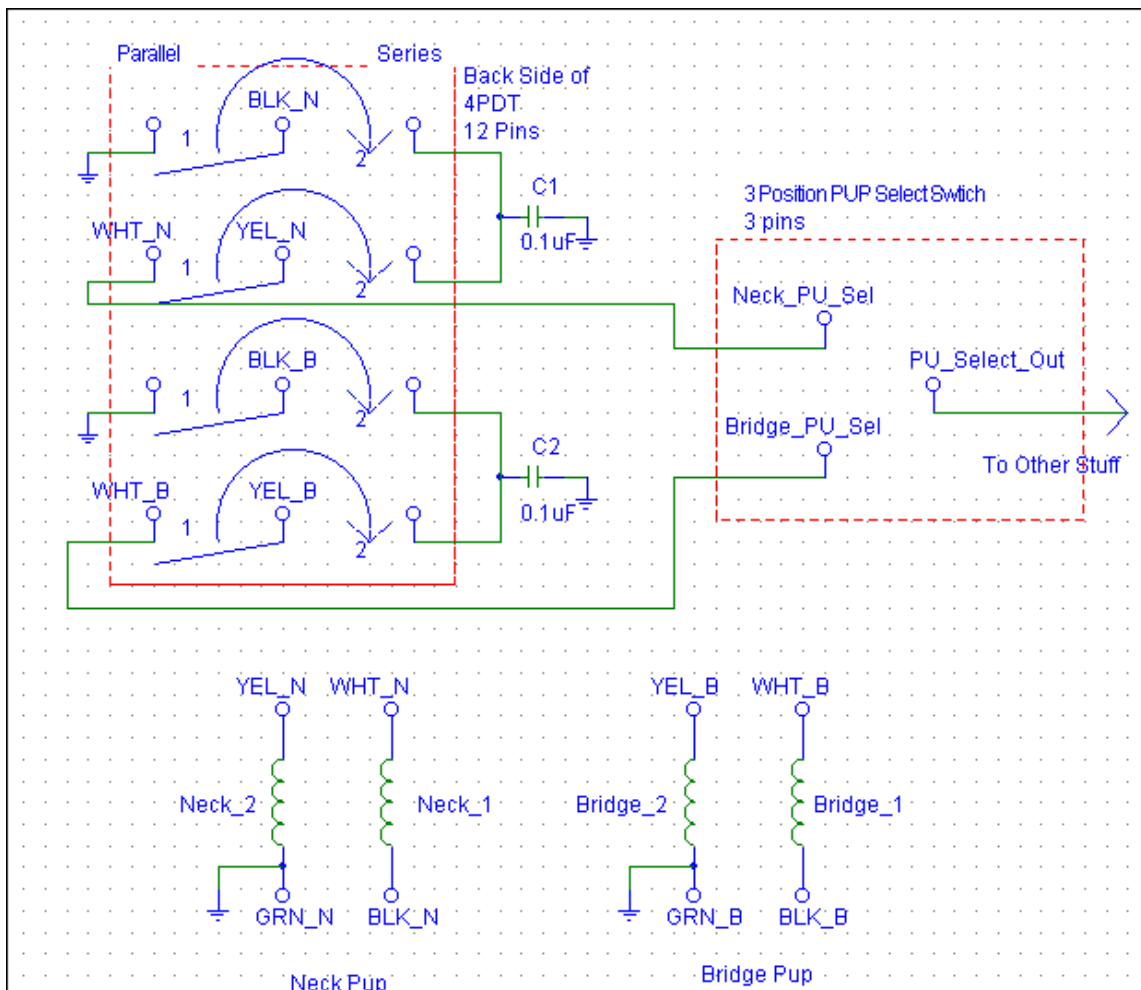
I have made some changes to the wiring approach relative to earlier versions of this document. The Tribute L2Ks are nicely shielded with conductive paint and the green wire from the pickup gets tied to both the cavity shield ground and the pickup assembly case. This improves the G&L noise rejection. In order to preserve this noble grounding improvement, I will not unground either of the green pickup wires as was shown in earlier versions of this document.

If you gain anything from this document or find something new that is really cool, please give me some feedback at DavePlaysBass@hotmail.com or look for me on Talkbass, FDP, or BABP.

2. Stock Wiring

L2K stock wiring should look like this. This details the pup connections leading up to the pup select switch. The G&L website provide a complete schematic of the pup wiring thru the pup select switch thru the bass / treble cuts thru the preamp. I have not included all this extra stuff because the mods in this document do not change anything down stream of the pup select switch.

Tributes' stock wiring is done differently. First off, Tributes do not have the capacitors C1 and C2. This means the series setting on the Tributes is different that USA models made before 2006. The latest US models also do not contain C1 and C2. Also in the Tributes they connect up the pickups to the switch a little differently. They have a variation that results in fewer solder joints. This along with the removal of C1 and C2 results in an easier to manufacture product. However, the end result is still the same regarding series and parallel connections.



The yellow-green coils are located closest to the neck and the white-black coils are located closest to the bridge.

Note that there is a 4-pole double throw switch that connects the center posts (poles) either to the left side contacts in position 1 or the right side contacts in position 2. Position 1 is parallel. Position 2 is series.

In the parallel setting each pup has it's two coils tied in parallel (yellow connected to white, green connect to black). When connected in this manner the magnetic signals add (musical stuff) and the noise signals cancel (noise). This is humbucking.

In series the grounded coil (yellow-green) is on the bottom and the ungrounded coil (white-black) is on the top. The yellow wire connects to the black wire with a 0.1uF to ground at that point of connection. Because of the capacitor the two coils for a given pup are not humbucking. The four coils working together are HUM ADDING because the same polarity of coil is in the bottom of each series string and the capacitors unbalance the humbucking nature. If the caps were not there, all of the series configurations (1 pup or 2 pups) would be humbucking. Tributes and US G&Ls made after 2006ish do not have capacitors C1 and C2.

3. Series Humbucking Modification #1 (Stock Hardware)

One other thing to note is that a well shielded bass does not hum much if at all. My Tribute came shielded. And it is quieter than two US G&Ls I have had.

The stock G&L series setting is not humbucking for two reasons. The first reason is that capacitors C1 and C2 create an unbalancing of the two coil windings. The yellow-green windings get all their highs shunted to ground thru these caps and the white-black winding do not. If the capacitors are removed, then the yellow-green and white-black windings will form a balanced humbucking situation. The first mod is simply removing these two caps.

This will change the series setting a bit. The capacitors take away a lot of highs which result in an overall response that is very bottom heavy. When the caps are taken out, there will be a lot more highs in the series setting and it will not have the “bass boost” function as much as it will just give a 6 dB boost relative to the parallel setting and will roll off at a lower frequency.

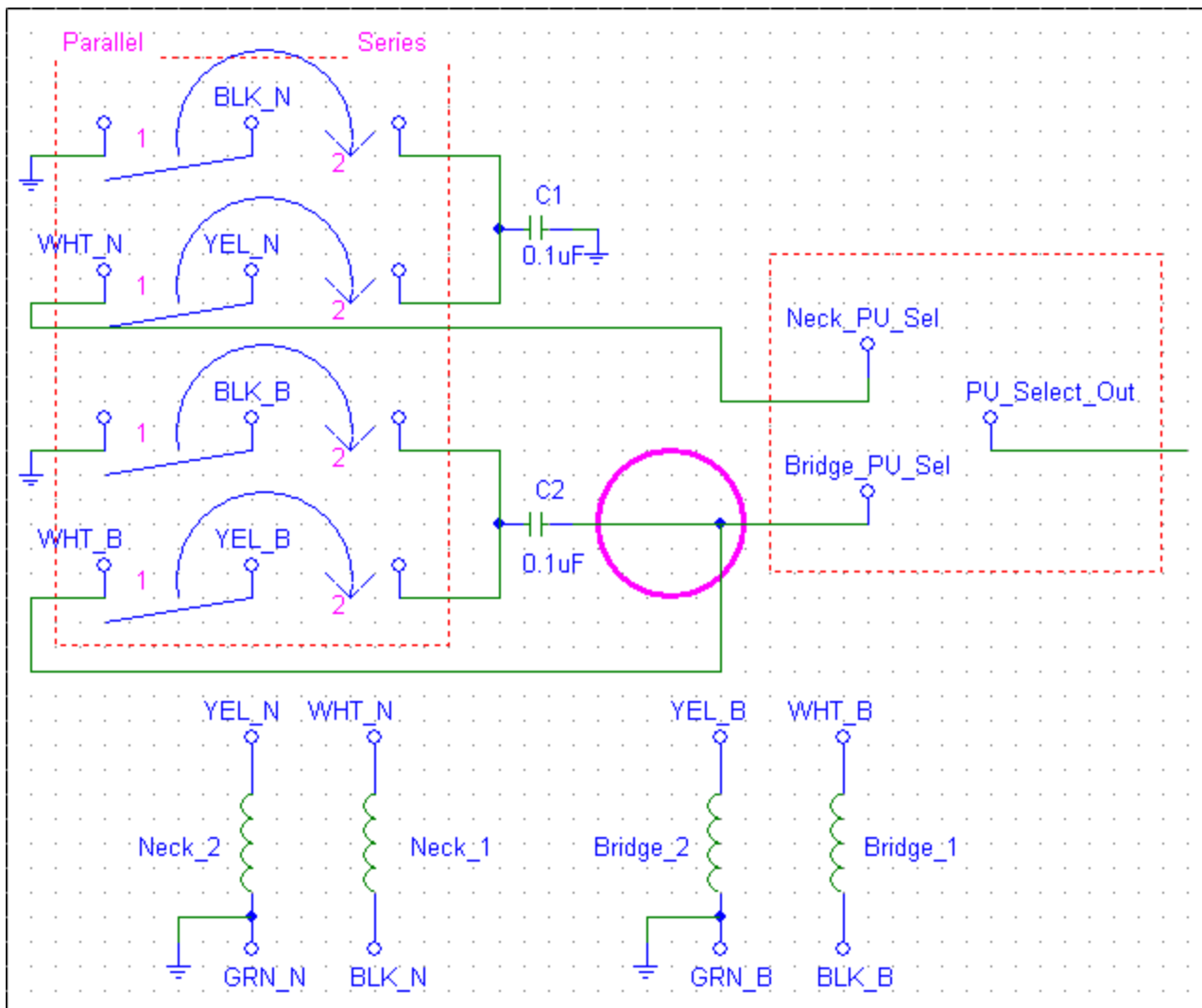
I personally did not like this setting very much on my Climax or my Tribute. I think the bass boost capacitors add a character that can be bottom heavy but with some bass cut there are some nice sounds to be had. But I include this for completeness and the fact that many have removed these caps and are happy with the results.

4. Series Mode Humbucking Modification #2 (Stock Hardware)

The second way to address the hum associated with series is to create a balanced humbucker with all four coils and C1 and C2. This is done by connecting C2 as shown below. When C2 connects as shown, the highs get sucked out of the top neck coil which is the white-black coil for the bridge. So from a humbucking perspective the neck white-black and the bridge yellow-green are full frequency and buck hum together with both pups on. And the neck yellow-green and the bridge white-black have their highs sucked out and also form a balanced pair with both pups on.

The limitation is that you only get humbucking operation with both pups. Solo a pup, and it will be just like the stock hum. However, with stock wiring, the two pickups in series mode are hum adding. So you get twice the hum with both pickups on with stock wiring. And this can be quite noticeable in an UNSHIELDED bass. Shielding makes a HUGE difference.

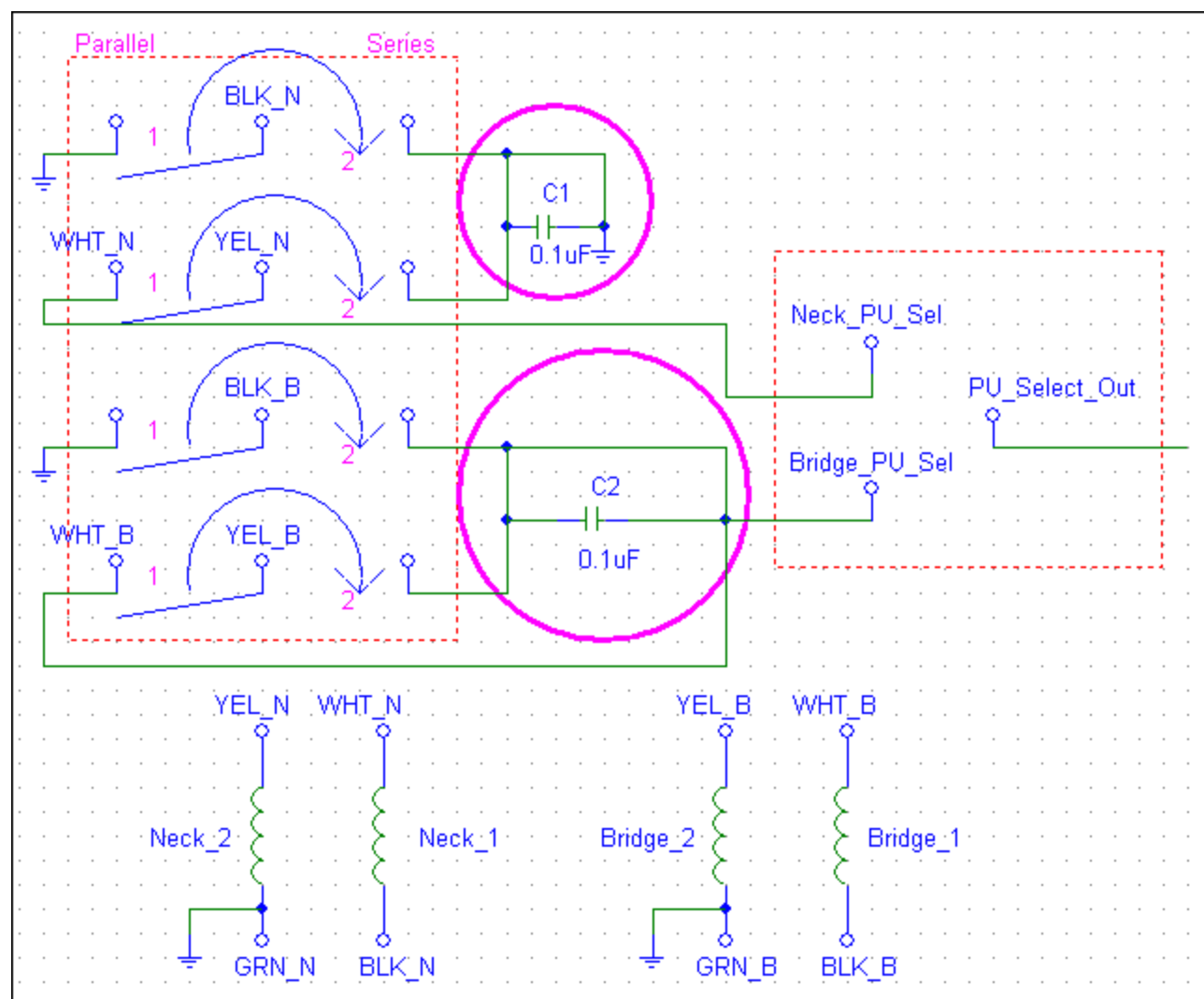
As for change in tone, there may be some difference on the bridge series setting. In the stock configuration the white-black bridge coil is the full spectrum coil and with the mod this is switched over to the yellow-green coil. On paper you have traded some treble bite for some midrange fatness on the bridge series setting. But it should be pretty negligible. I really like the soloed bridge pup in the series "SC with bass boost" setting wired as below. A very useful setting if a room is boomy.



5. Parallel – SC Inside Mod (Stock Hardware)

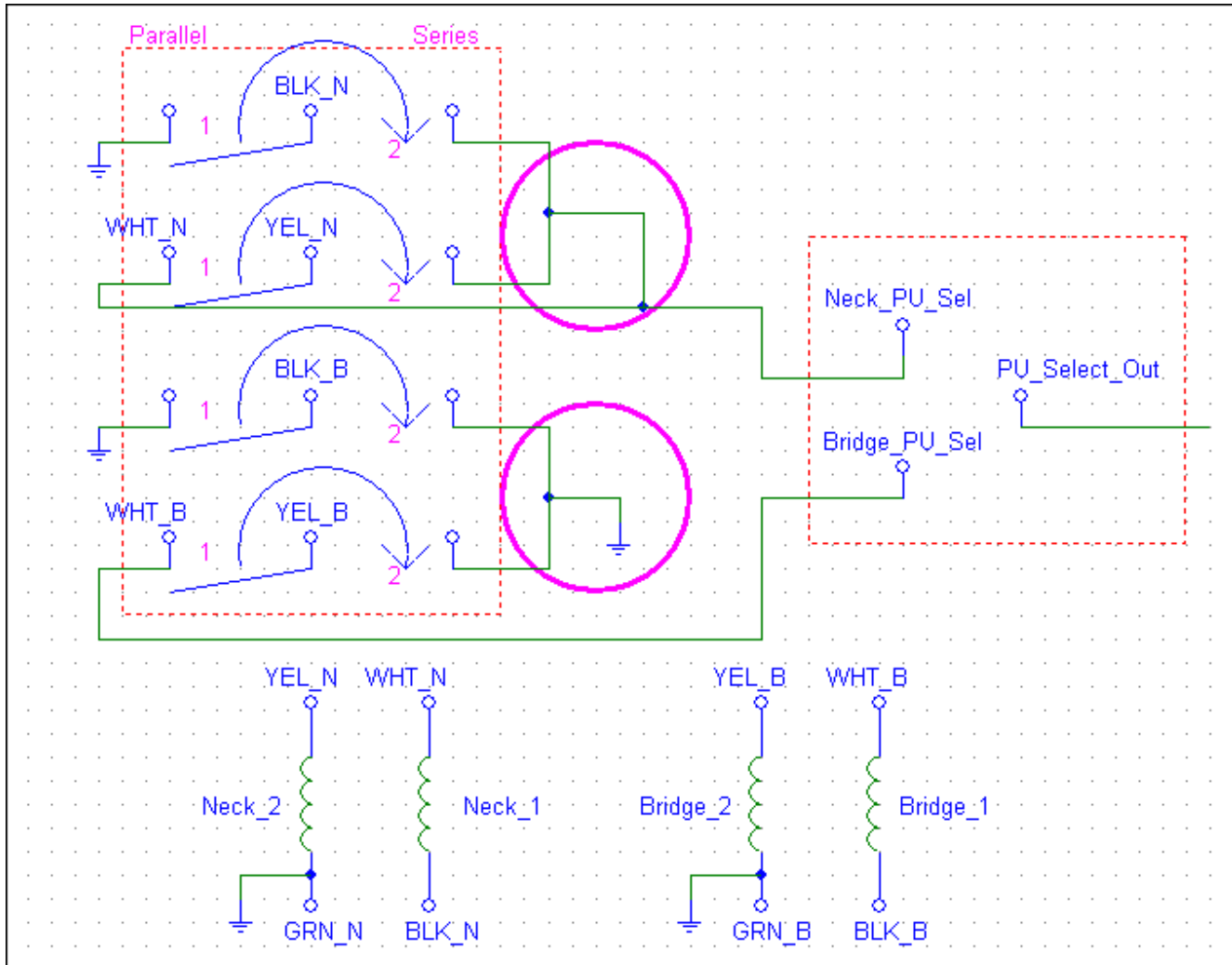
This mod eliminates series mode and replaces it with a single coil mode. The single coils selected are the inside coils (i.e. the neck pup coil closest to the bridge and the bridge pup coil closest to the neck). This uses all the stock hardware provided with an L2K and is very easy to undo. NOTE THAT the C2 capacitor has been rewired per section 3 first. THIS IS ESSENTIAL to making this work correctly.

If you do not have capacitors C1 and C2 in your bass, just add the shorts and ignore the capacitors.



6. Parallel – Single Coil Outside Mod (Stock Hardware)

This mod eliminates series mode and replaces it with a single coil mode. The single coils selected are the outside coils. This uses all the stock hardware provided with an L2K and is very easy to undo. NOTE that C1 and C2 have been pulled from the circuit. THIS IS ESSENTIAL. You could have a capacitor in parallel with the short and it would not affect things.



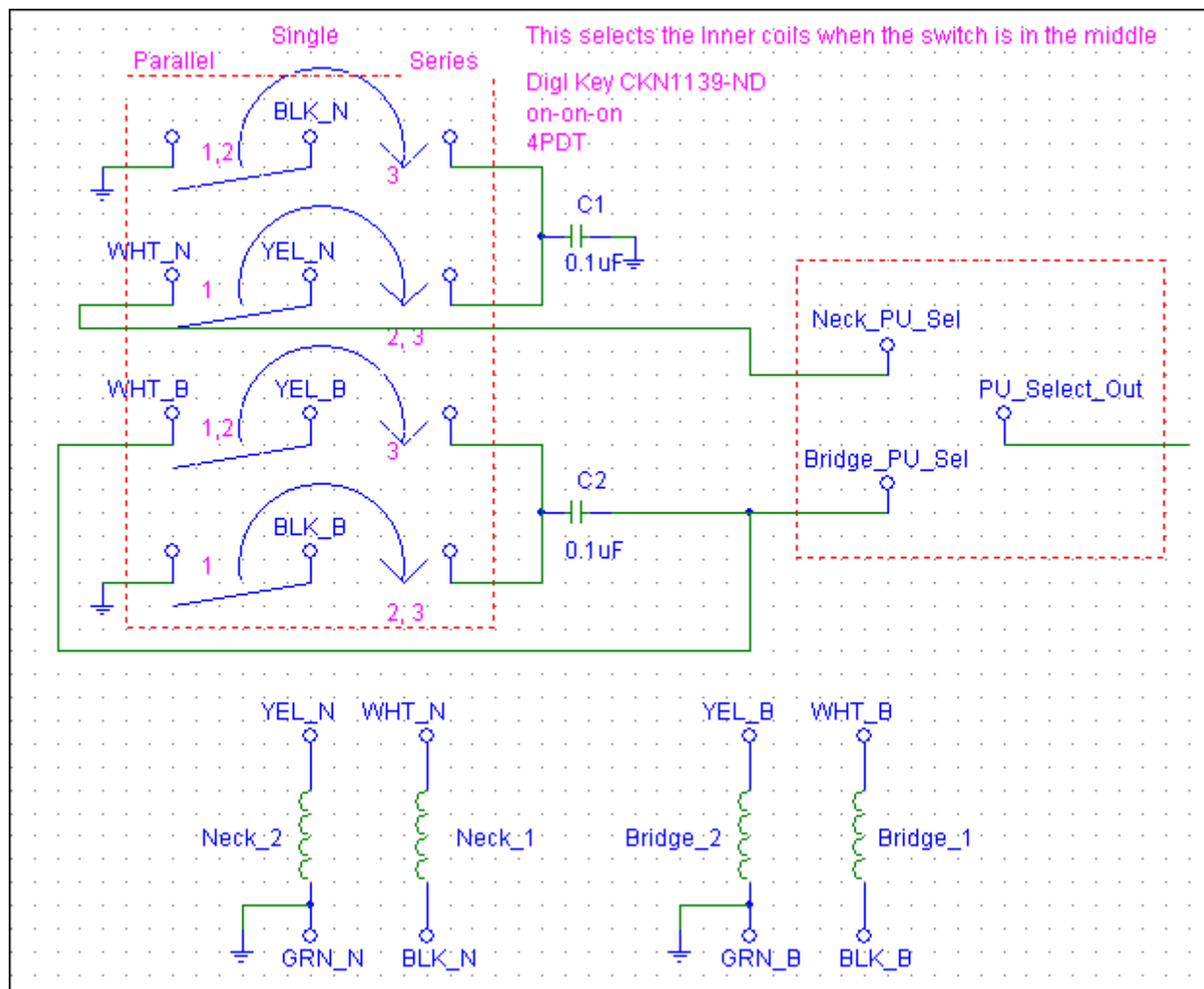
7. Parallel – Single Coil Inside – Series Mod (3-Position 4PDT)

This modification replaces the two position on-on 4PDT with a three position on-on-on 4PDT. The middle position provides an inside single coil (SC) setting.

Today, this is my preferred single coil setting. With both pups on, it is punchy and thick but clearer than parallel. Think of it as a wide Stingray or Climax humbucker with a little more bottom end. Solo the neck, and you get the L1K SC setting (coil closest to bridge). I have my Tribute L2K wire like this. I like it a lot. My go to setting is the SC – both pups – active or passive depending on how much sizzle is desired.

IT IS ESSENTIAL to verify that the switch behaves exactly as indicated below. This can be wired with or without capacitors C1 and C2. They are only active in the circuit in the series setting and provide the “single coil with bass boost” series setting.

BE SURE TO VERIFY THAT THE SWITCH USED performs as specified below (the Digi Key CKN1139-ND does). In other words in position one (parallel) all of the poles (center posts) should be connected to the left side, in position two (single coil), two of the four poles change position to the right side, and in position three (series) all of the poles are connected to the right. MAKE SURE THAT IN SINGLE COIL MODE (middle position or position two), that everything matches the drawing below. The numbers 1,2, and 3 are used to indicate where each of the four poles are connected at the respective switch position. If this does not make sense, find someone that can help you figure it out. If things are done backwards, the single coil mode will not work as intended.



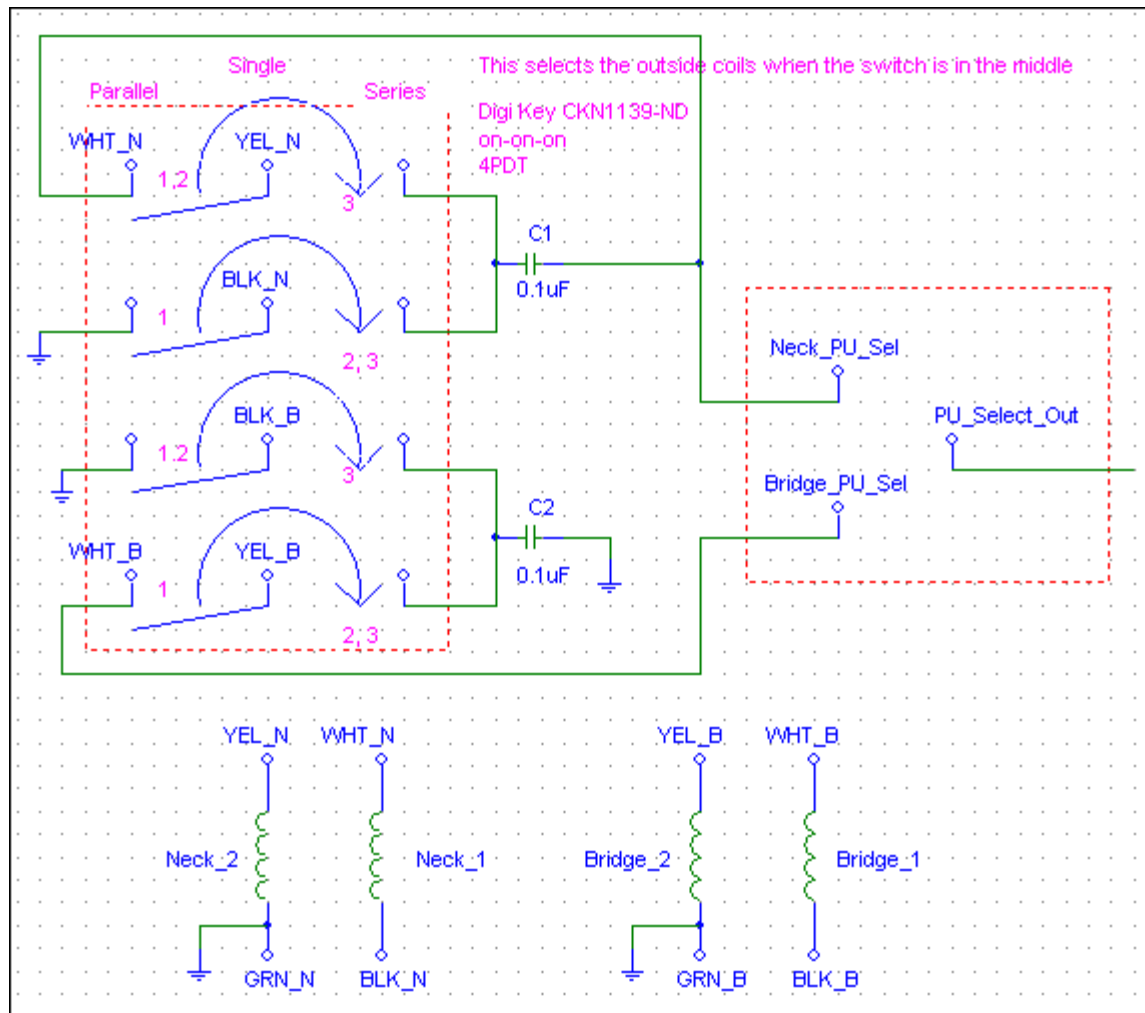
8. Parallel – Single Coil Outside – Series Mod (3-Position 4PDT)

This modification replaces the two position on-on 4PDT with a three position on-on-on 4PDT. The middle position provides an outside single coil (SC) setting.

With both pups on, this provides a scooped sound that is great for slap. Think 70's Jazz Bass.

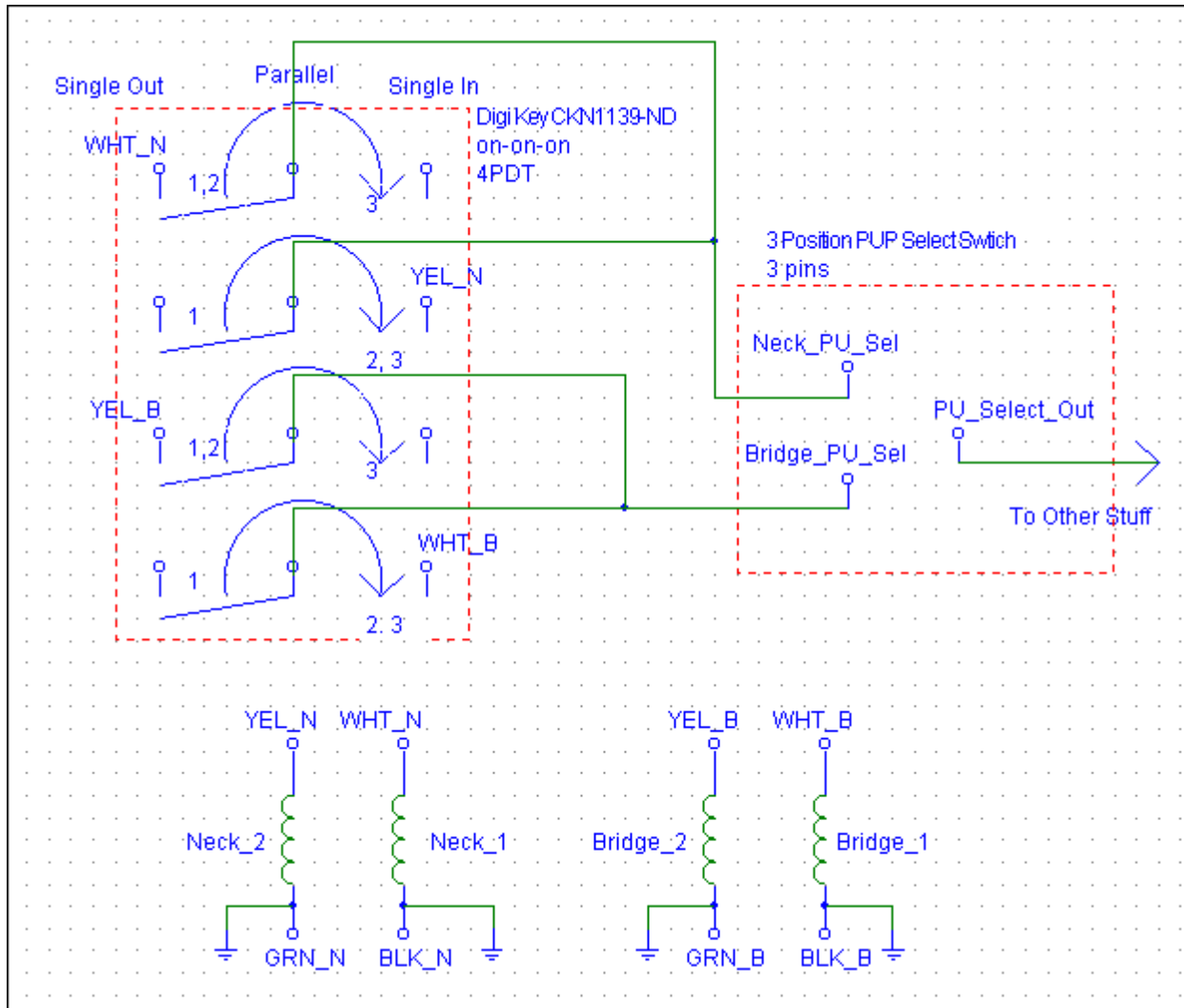
NOTE that C1 and C2 are wired reverse of sections 4 and 6. This emphasizes the outside coils in the “single coil with bass boost” series setting.

BE SURE TO VERIFY THAT THE SWITCH USED performs as specified below. In other words in position one (parallel) all of the poles (center posts) should be connected to the left side, in position two (single coil), two of the four poles change position to the right side, and in position three (series) all of the poles are connected to the right. MAKE SURE THAT IN SINGLE COIL MODE (middle position or position two), that everything matches the drawing below. The numbers 1,2, and 3 are used to indicate where each of the four poles are connected at the respective switch position. If this does not make sense, find someone that can help you figure it out. If things are done backwards, the single coil mode will not work as intended.



9. SC Outside – Parallel – SC Inside Mod (3-Position 4PDT)

This modification eliminates series mode and has a three position switch that goes single coil outside => parallel => single coil inside.



10. Further Mods

There are many more wiring variations possible to the creative mind. Leo Fender created one hell of a platform that has a lot more possibilities than the stock wiring. The amazing thing is that nearly everything I have modded results in a useful tone. Leo has left us hidden tones in the L2K. I don't know of any other bass that can produce so many different useful tones just by simple coil rearrangement and the clever use of a couple capacitors.

I have corresponded with people who have taken the basic ideas in this document and expanded them further. One individual (Benj) drilled for a second 4PDT switch and gets parallel – series from the stock switch but in parallel mode he can use a 3 position switch like described above to go inside SC – parallel – outside SC (this will not work with the bass boost capacitors in place).

Another individual (Sunbeast) has written about using individual DPDT switches for each pup so that he can get each pup in a different state (parallel, SC, or series). He did this by pulling the pup select switch and replacing the master volume with concentric volume pots (if I remember correctly). Not only did he get individual control of each pup state, he got the ability to blend them like a Jazz. The only drawback I see is the loss of the master volume which to me is very useful with these rather high output basses. I also think the master volume can be used as a tone control.

I had a bass wired SC inside – SC outside using the stock 4PDT switch. I have thought about ditching parallel and going with a 3-way switch that does both SC settings and the series setting. Or I could replace the Master Volume pot with a push-pull that could be pulled when in parallel to get me the outside SC setting I do not have today.

If you are having a hard time understanding what is going on with these mods. Draw the coils and their associated connections for each switch state. After doing this a few times, it may start to make more sense.

And if you gain anything from this document or find something new that is really cool, please give me some feedback at DavePlaysBass@hotmail.com or look for me on Talkbass, FDP, or BABP.