The Forum-Vibe Project

By: Brad Burt - (*aka; RedHouse*)

About The Forum-Vibe Project

(circa 2002)

What it is...

This layout is an effort to make a multi-use vibe PCB which supports vintage or higher performance builds, allowing layout space for alternative component choices and supporting most of the common mods that have been contributed in the NewsGroups (ya, that's how old!) and Forums over the years. This board is also a bit more user-friendly than software generated boards going around on the internet, traces and pads are wider so the experimenter can solder/un-solder more times before permanent damage occurs to the board (YMMV). This Forum-Vibe uses 70's style stand-up components where possible ie; resistors stand up on one leg saving board space. Supported mod's include JC Maillet's bulb bias Offset-Adj mod (the single most useful vibe-mod IMHO) which allows nearly any small bulb to be dialed-in, finding the sweet spot for the LDR's. This pretty much negates the old problem of finding the "right" LDR's or Lamps for a vibe build. This Forum-Vibe board supports vintage or modern builds in any combination, I only show the 3 most important ones but the rest can be found on the forums.

Kudos

The Forum-Vibe PCB was based on JC Maillet's (1996) vibe board he had contributed to the forums which was single-sided self-etch board with copper traces and components all on the same side!. The top-3 mods supported are JC's bulb bias Offset-Adj mod, my input pad mod, and the *output mix* mod (by RG Keen) is supported.

About this Project

This is not an *entry level* project, it is for those fairly skilled DIY effects builder who have already had experience with other projects, if you build this project and it doesn't work, you have simply made a mistake, or have a bad component, or solder joint. Mis-orientation of components is the number 1 cause of malfunctional and non-functional units. So many people have built this project successfully and they just work. This documentation mostly uses graphics to explain the build, part locations, and orientations.

Parts

Transistor package pin-outs vary depending on manufacturer, so download the datasheet for your transistors. This PCB supports CBE pinout's (and EBC) but does not support the 2SC style ECB. The silk screen legend on the PCB's show a white band on one end of each transistor graphic that indicates where the Emitter pin goes. The option to replace the 1uF Electrolytic caps was high on my list of mod's, and indeed I chose Pansonic ECQ-V series stacked film capacitors for that mod.

Note: Circa 2022, the Forum-Vibe PCB is on it's 5th version (FV-5) and 3rd revision (rev3)

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The Vintage Build

Doing a "vintage" style Forum-Vibe build is fairly straight-forward, you just need to stuff the board closely following the diagrams on the next few pages. Be aware that if you want a true vintage style build try to get proper Photocells (LDR's) and Lamp/Bulb if you expect it to sound like an original Uni-Vibe. Much of the *character* of the "throb" comes from them. You likely will not have access to original parts so I suggest you should use the JC *bias-offset mod* in your "vintage" build because it can help you dial-in your Bulb/LDR combination when using whatever parts you can get ahold of.

Refer to the schematic and layout diagrams and the "vintage" build will be fairly easy (as vibe builds go), there are two layout graphics one shows the *Reference Designations*, the other shows the *Values* of the parts so make sure you get them in the right locations. Make sure you get your polarity's correct on your electrolytic caps, you can have issues with your build if you goof that up. Reference the "Parts Values" graphic and the "RefDes" (reference designations) graphic.

There are a few of things to be said when doing a vintage style build, there are some discrepancies in the original OEM schematic and part changes/substitutions. It's unknown if the part changes were due to production-run substitutions because of supply chain isues or design revisions that drove the changes but there are a few different things to note about OEM vibes.

For instance the C14-Q10 discrepancy, the original OEM schematic shows the .0047 cap connected to the emitter of Q10 at the junction of R31-R32-C16 ...but... most production vibe PCB's have that cap connected to the base of Q10. Only one source to my knowlege has said his was in fact as the OEM schematic shows but it was never confirm/validated.

Another on the list is the R46 discrepancy, where the OEM schematic shows a 47k resistor, most production vibes actually have a 4k7 resitor in that position.

Also on the list is the R43-R44 discrepancy, the OEM schematic show 4k7 resistors, but many production vibes actually have 3k3, 2k2 in those positions. The smaller value resistors give a faster top-speed but also be aware you can stall/lock-up the LFO if you go too low there and only a power-off/on cycle will restart the LFO.

Finally the R36 discrepancy, the OEM schematic shows 47k resistor, many production vibes have a 100k resistor in that position. There is also the infrequent substitution of the normally used 2SC828 transistors with 2SC945 and 2SC536 types which I've documented elsewhere on my website.

These things have been noted and debated on the internet for years, the deciding factor (for me) regarding actual components is seeing so many actual vintage uni-vibe's on my own workbench.

Don't forget to install your jumpers!

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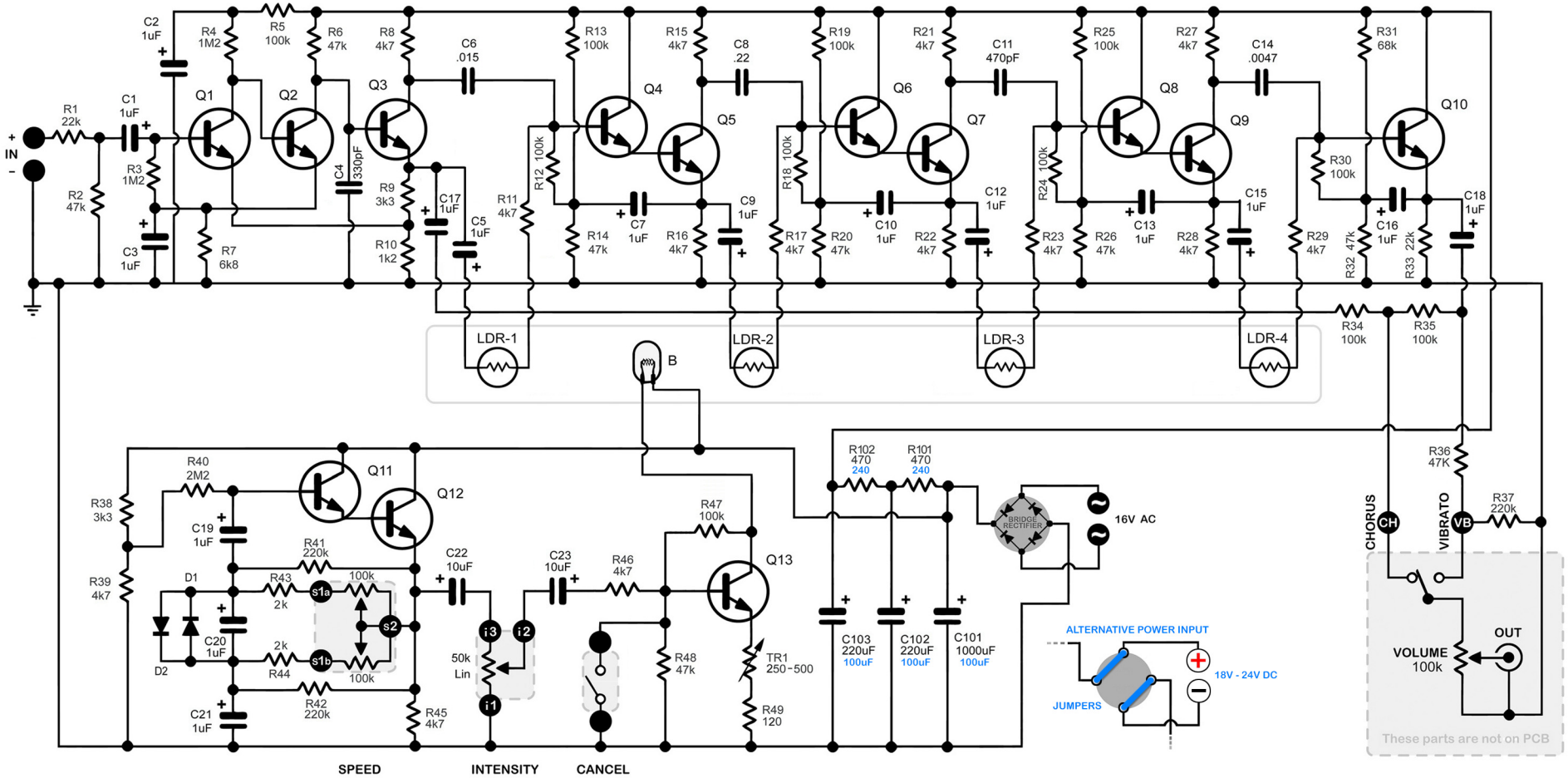
FV-5 rev3 SCHEMATIC DIAGRAM

Vintage Build



NOTE: Capacitors C101, C102, and C103 should be compact types such as Nichicon VK or VR series which are 10mm X 12mm size.

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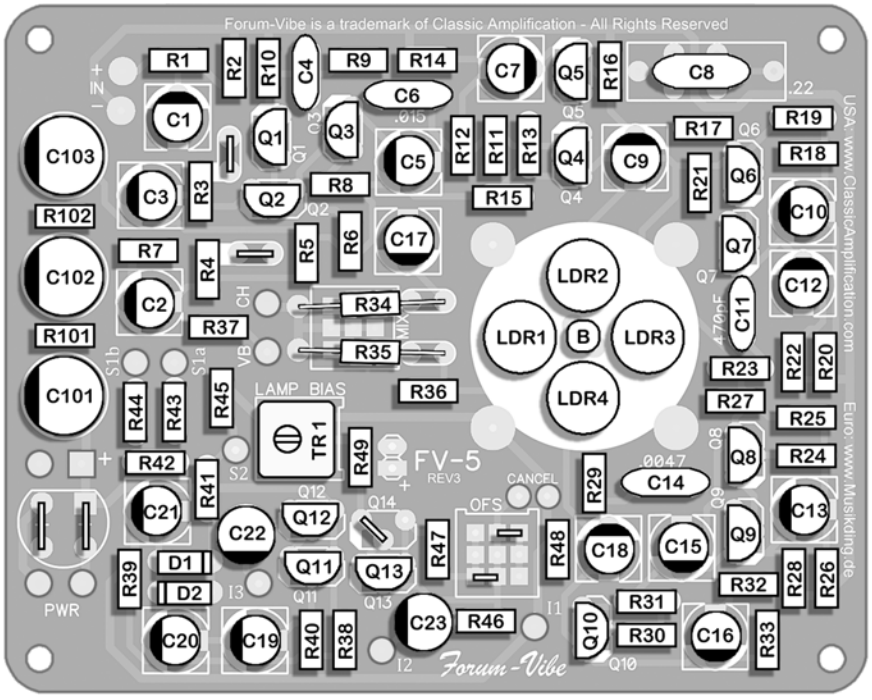
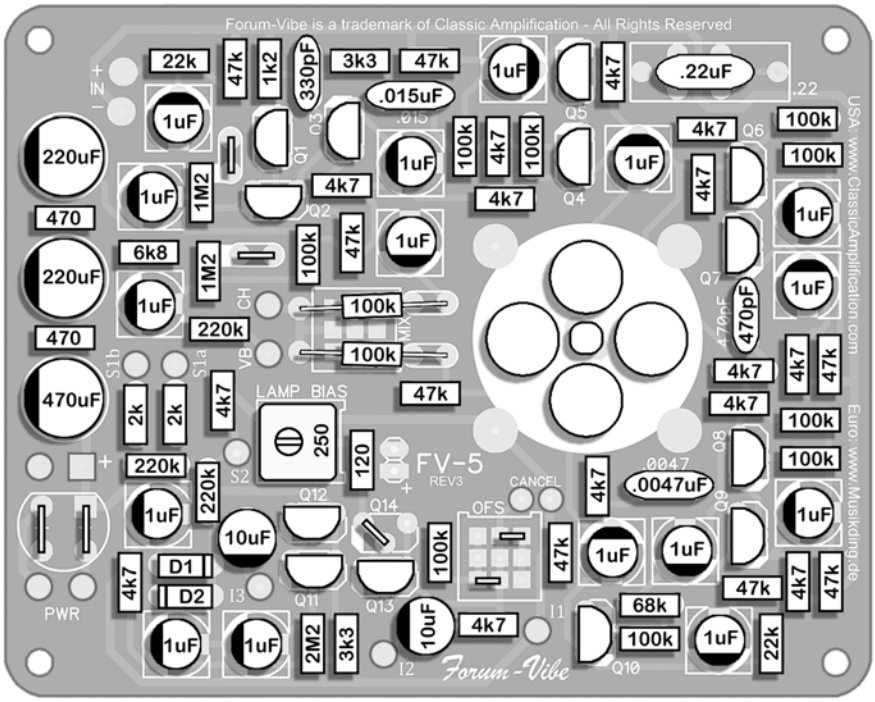
FV-5 rev3 Vintage Build Part Layout

Part Reference Designations



Part Values



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Vintage Parts List

Part Value	Qty	Part *(Part Reference Designation)*	Notes
BC549C	1	Q1	
BC549B	12	Q2, Q3, Q4, Q5, Q6, Q7, Q8, Q9, Q10, Q11, Q12	
1N4001	2	D1, D2	or 1N4148, or 1N914
120	1	R49 (original value was 150)	
1k2	1	R10	
3k3	2	R9, 38	
4k7	14	R8, 11, 15, 16, 17, 21, 22, 23, 27, 28, 29, 39, 45, 46	
6k8	1	R7	
22k	2	R1, 33	
47k	7	R2, 14, 20, 26, 32, 36, 48	
68k	1	R31	
100k	11	R5, 12, 13, 18, 19, 24, 25, 30, 34, 35, 47	
220k	3	R37, 41, 42	
1M2	2	R3, 4	
2M2	1	R40	
1 uF - 25V	16	C1, 2, 3, 5, 7, 9, 10, 12, 13, 15, 16, 18, 19, 20, 21	Electrolytic
10 uF - 25V	2	C22, 23	Electrolytic
330pF (n33)	1	C4	Ceramic
470pF (n47)	1	C11	Ceramic
.0047uF (4n7)	1	C14	Polyester (Greenie)
.015uF (15n)	1	C6	Polyester (Greenie)
.22uF (220n)	1	C8	Polyester (Greenie)
250- 500 Ohm Trimmer	1	TR 1 (original was 300) Bourns 3386F	Mouser# 3386F-1-251LF
50k Lin	1	Linear Taper - Intensity control	
100k Lin	1	Linear Taper - Volume	
Dual 100kC	1	Reverse Log Taper - Stompbox Speed control (not foot pedal)	
SPDT Switch	1	Chorus/Vibrato switch	
1/4" (6.5mm) Jacks	2	Input and Output Jacks	
Lamp Bulb	1	Any 1.2v to 14v DC lamp of less than 100mA will do	Search The Forums
LDR's	4	Fast Response (1k-40k Light, 1M-20M Dark) LDR / Photocells	Search The Forums

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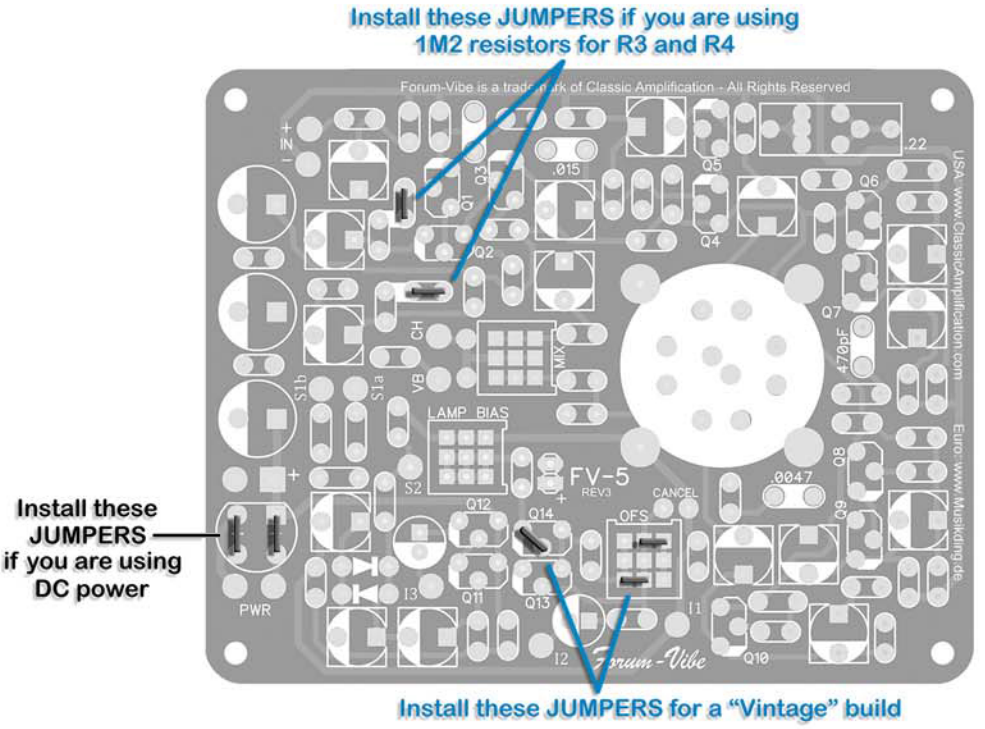
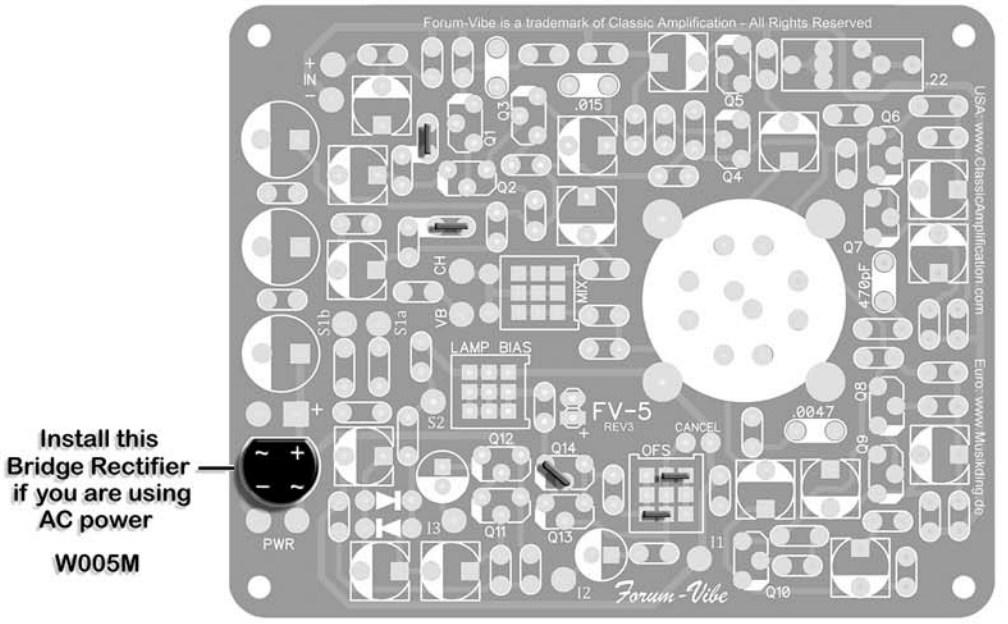
FV-5 rev3 PCB





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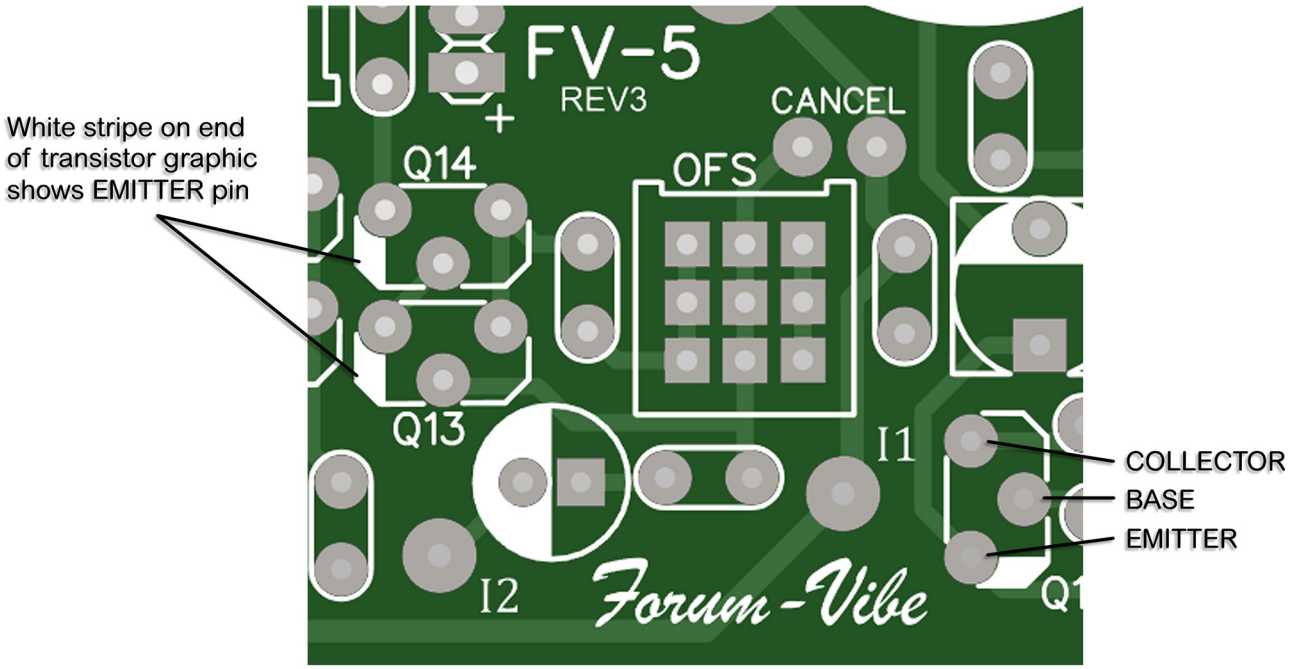
Transistor Pinout Silk Screen Graphic



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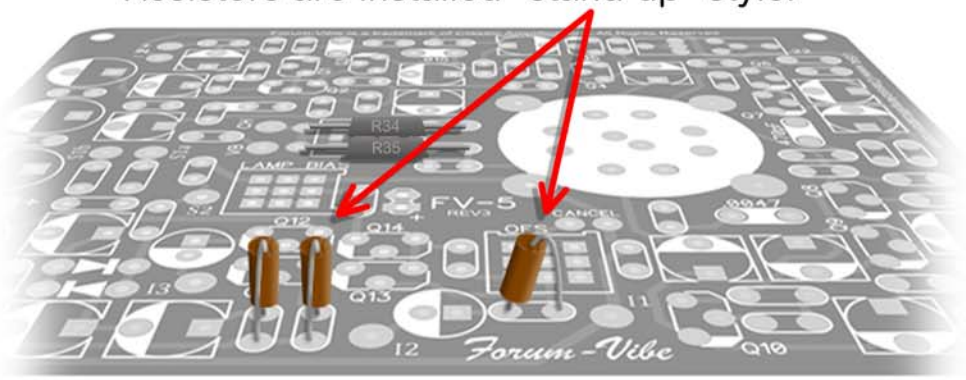
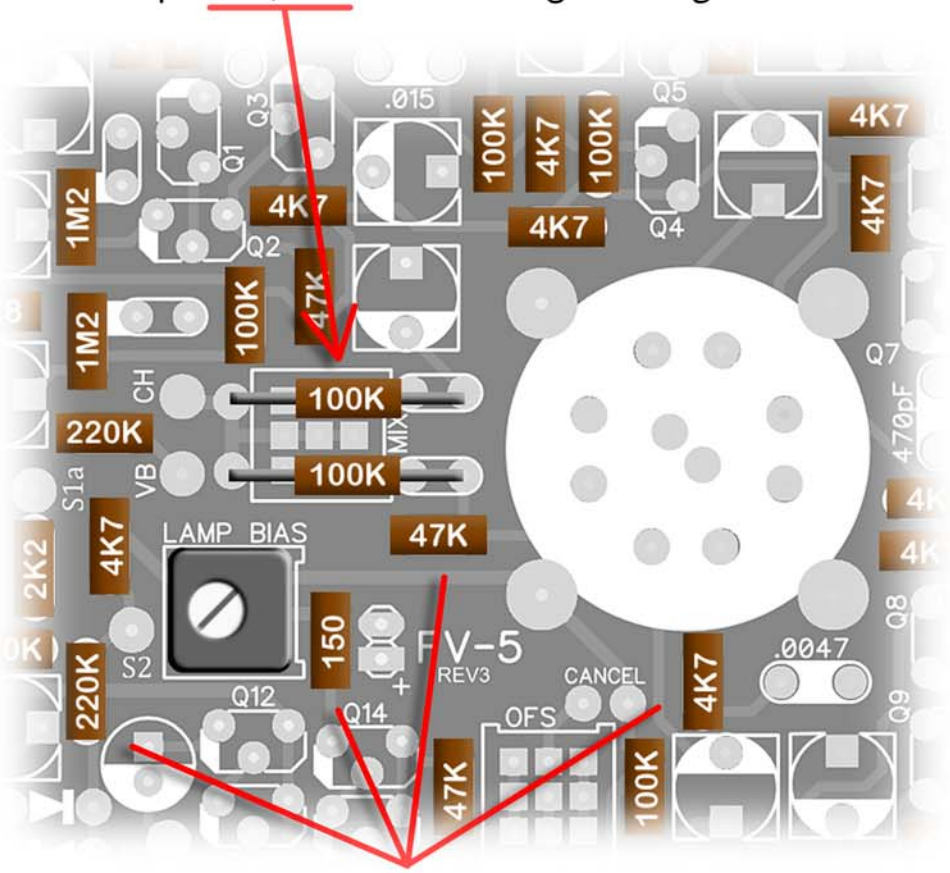
FV-5 rev3 Board

Resistors are installed “stand-up” style:



Except R34, R35 when doing a *Vintage* build:



In these layout graphics, resistors look like they are laying down flat this is only so their labels can be read easy when doing your build the resistors should be installed “stand-up” style.

(except R34 and R35 when doing a *Vintage* build)

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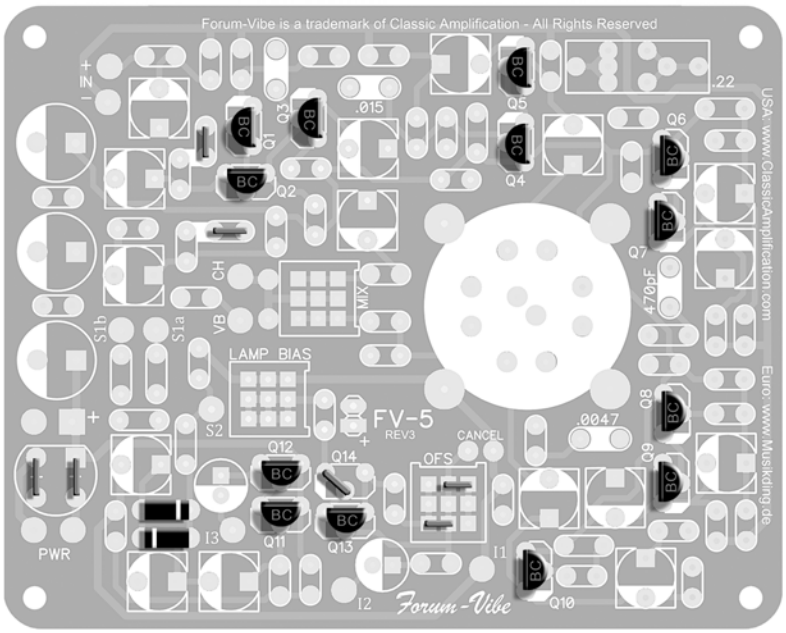
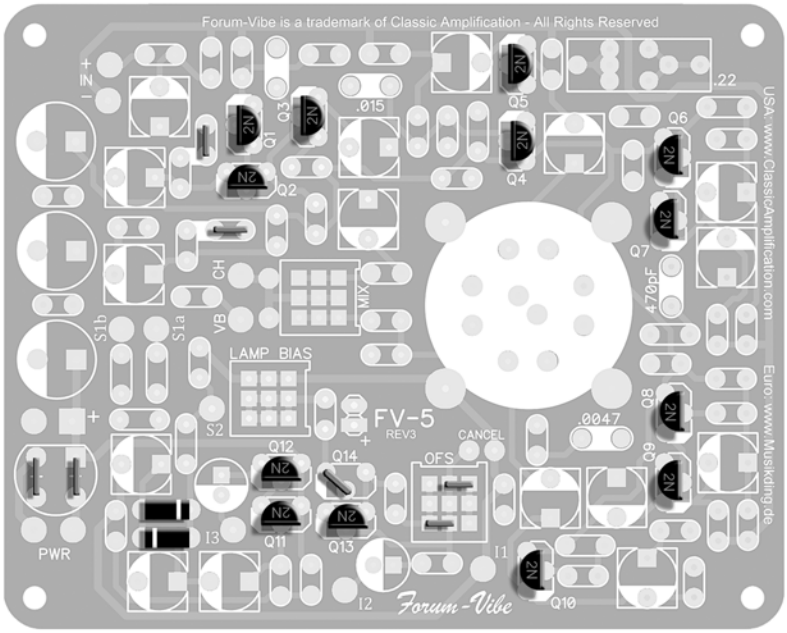
FV-5 rev3 PCB

Choose and install your transistors, and diodes

BC549 transistors



2N5210 transistors



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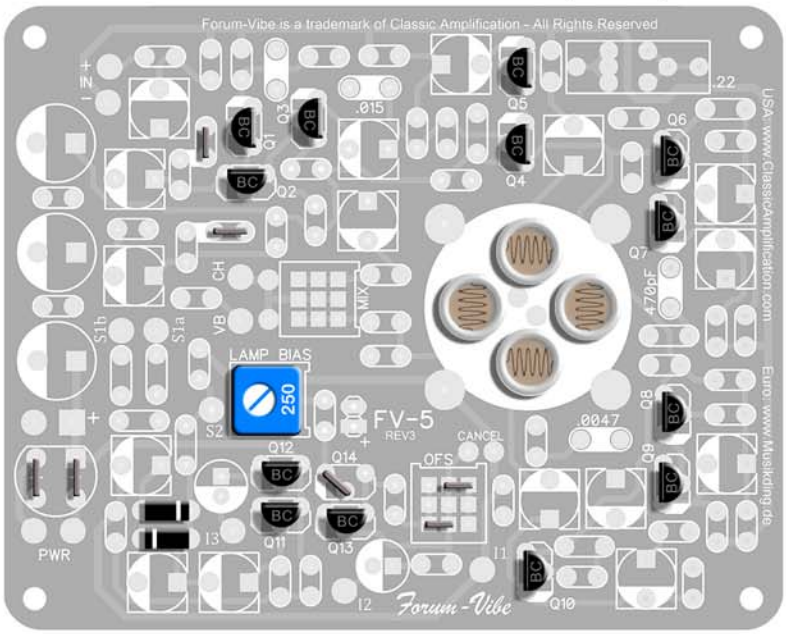
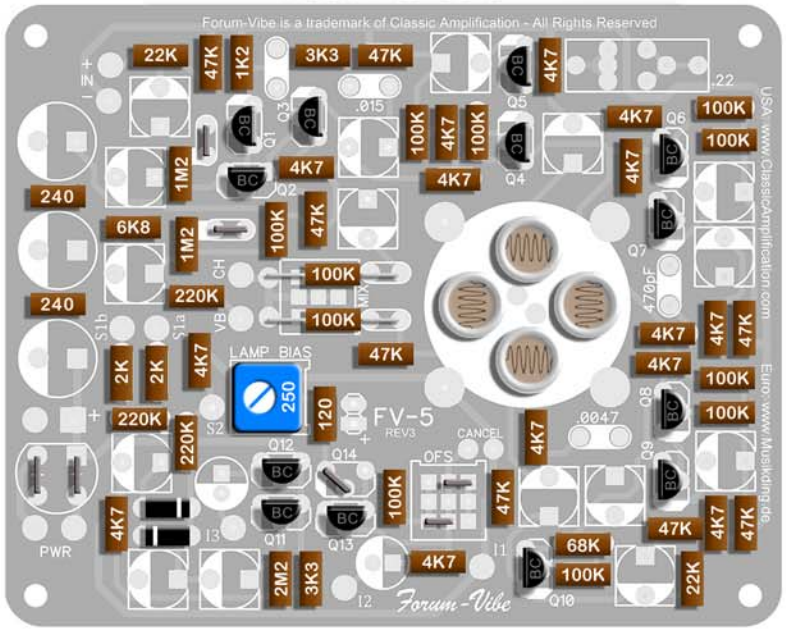
Install Trimmer and Photocells (LDR's)



Install Resistors



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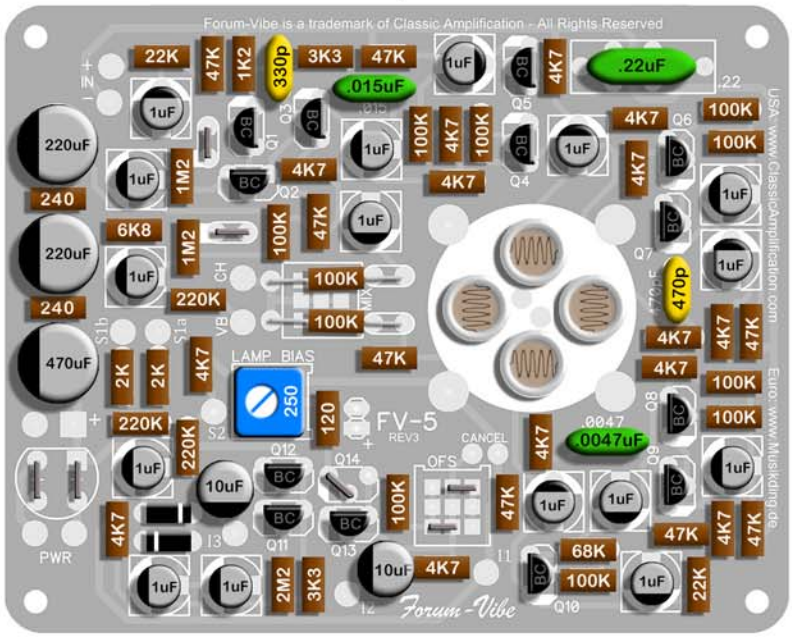
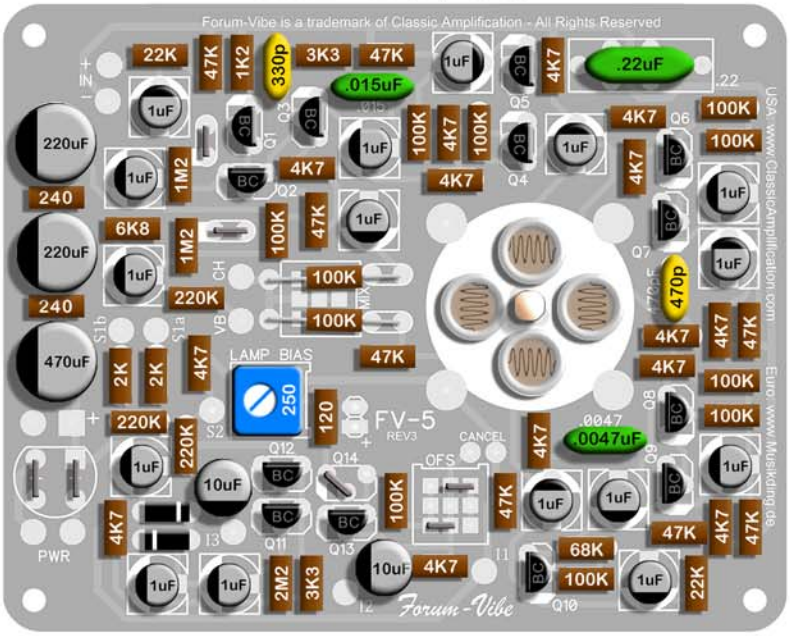
Install Capacitors



Install Lamp (Bulb)



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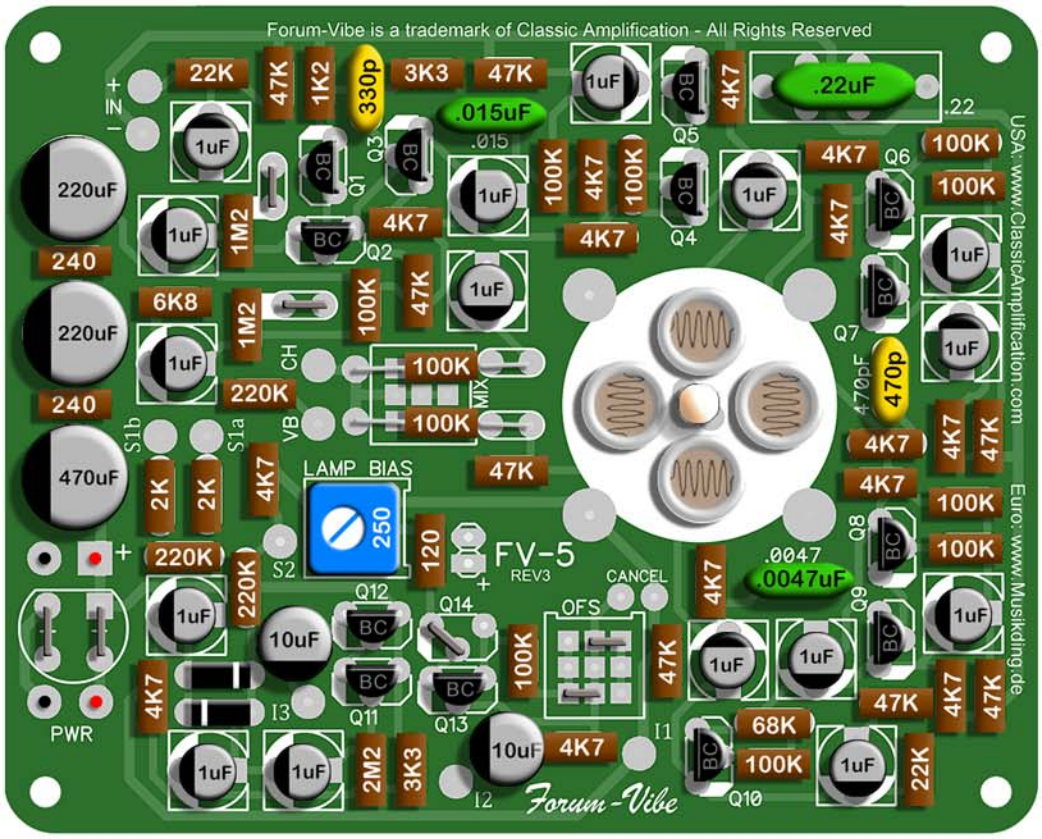
FV-5 rev3 PCB

(Vintage Build)

Completed Vintage Build



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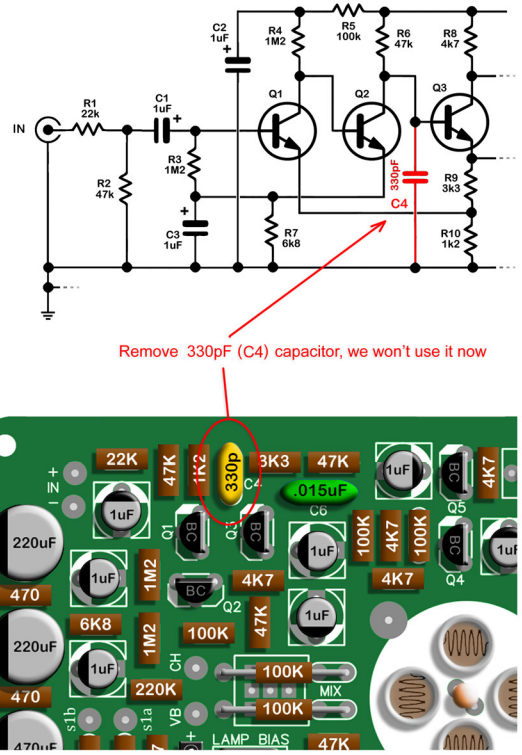
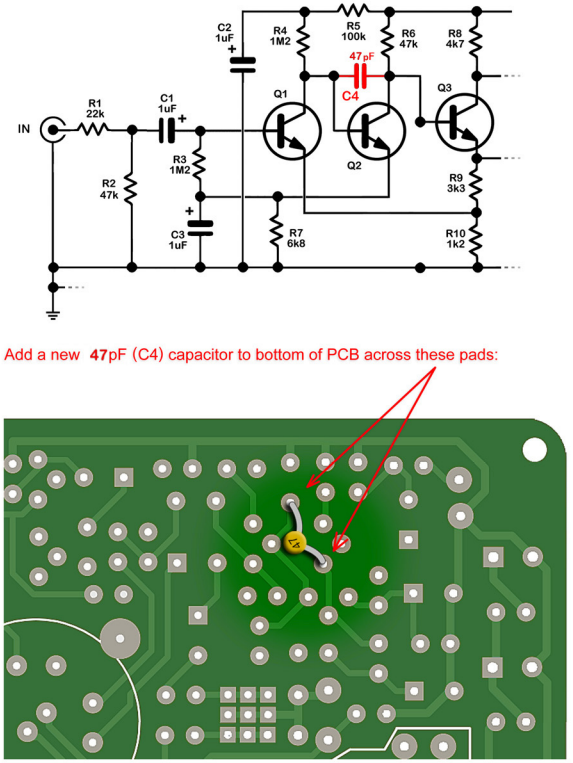
Dealing with oscillation problems in the pre-amp

Oscillation problems can arise in the pre-amp section when using modern transistors for your build. The original 2SC828 transistors used in Uni-Vibe's were "Q" type normally fell in the 160-200 hfe range, modern equivalent transistors are usually in the 325-475 hfe range 2x and 3x the design of the old vintage circuit, so oscillation problems can arise. The frequencies (well above 20KHz) can effectively hetrodyne into the audio spectrum of the circuit and show up as unwanted "noise" and "high frequency hiss" like sounds. If you can't find/use transistors with the 160-200 hfe range the "cure" for having oscillations is to remove the 330pF (C4) capacitor, add a new **47pF** (C4) capacitor connected as a high frequency shunt across Q2's Base and Emitter. The easiest way to do this is shown below...





Do not leave the original 330pF capacitor in place

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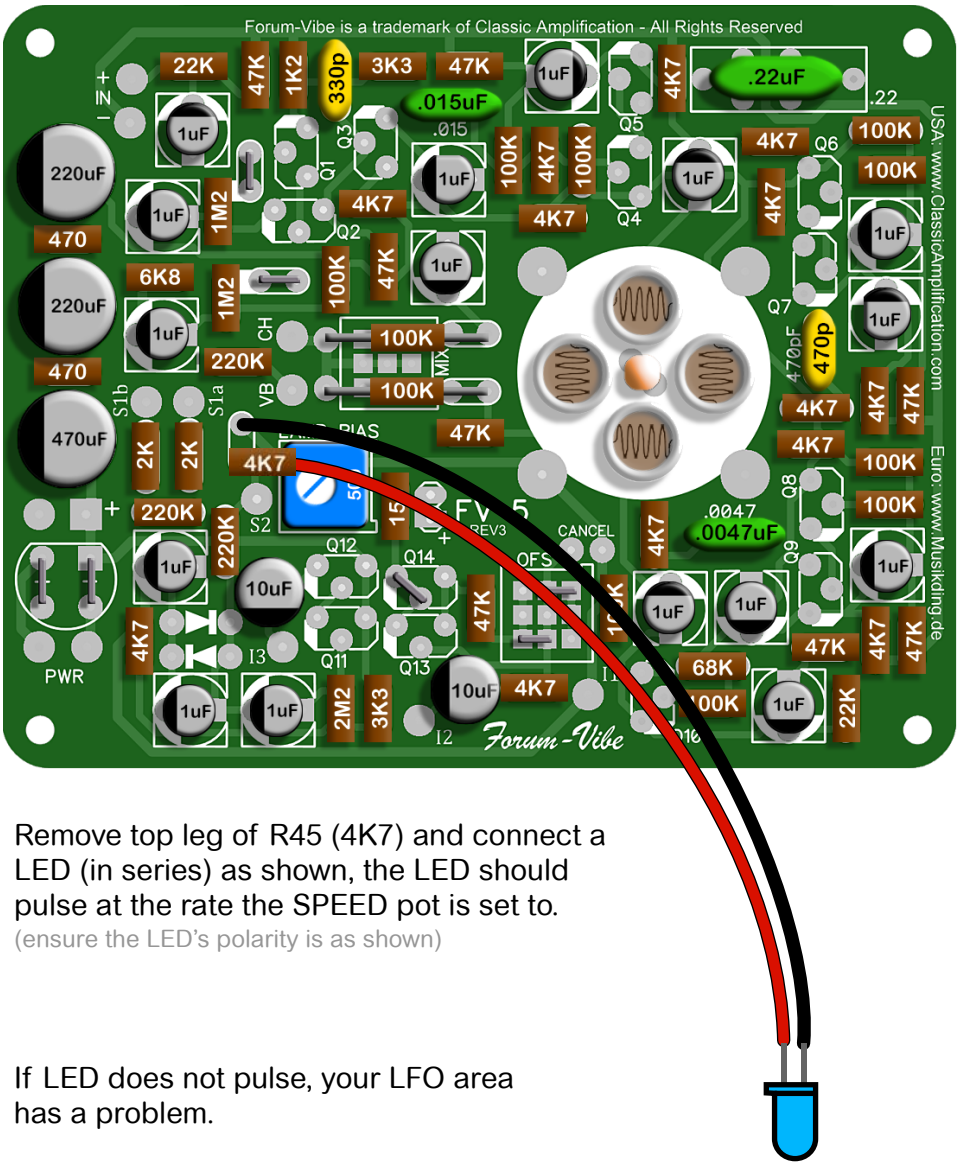
Using an LED to Trouble-shoot LFO and Lamp problems

(FV-5 rev3)



Remove top leg of R45 (4K7) and connect a LED (in series) as shown, the LED should pulse at the rate the SPEED pot is set to.

(ensure the LED's polarity is as shown)

If LED does not pulse, your LFO area has a problem.

If LED pulses but your Lamp does not, the lamp driver area has the problem.

(or your INTENSITY pot is off)

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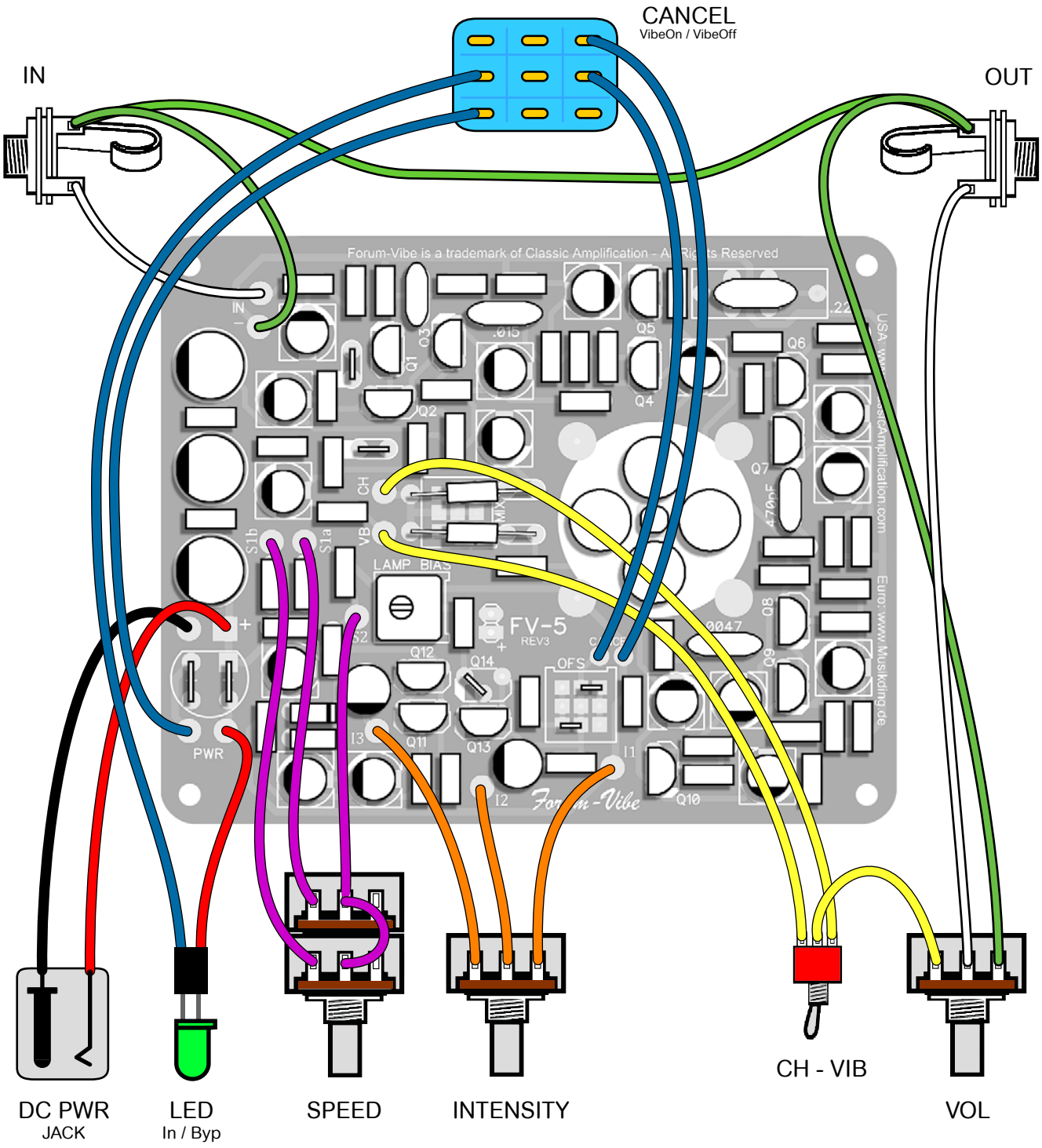
BASIC HOOKUP



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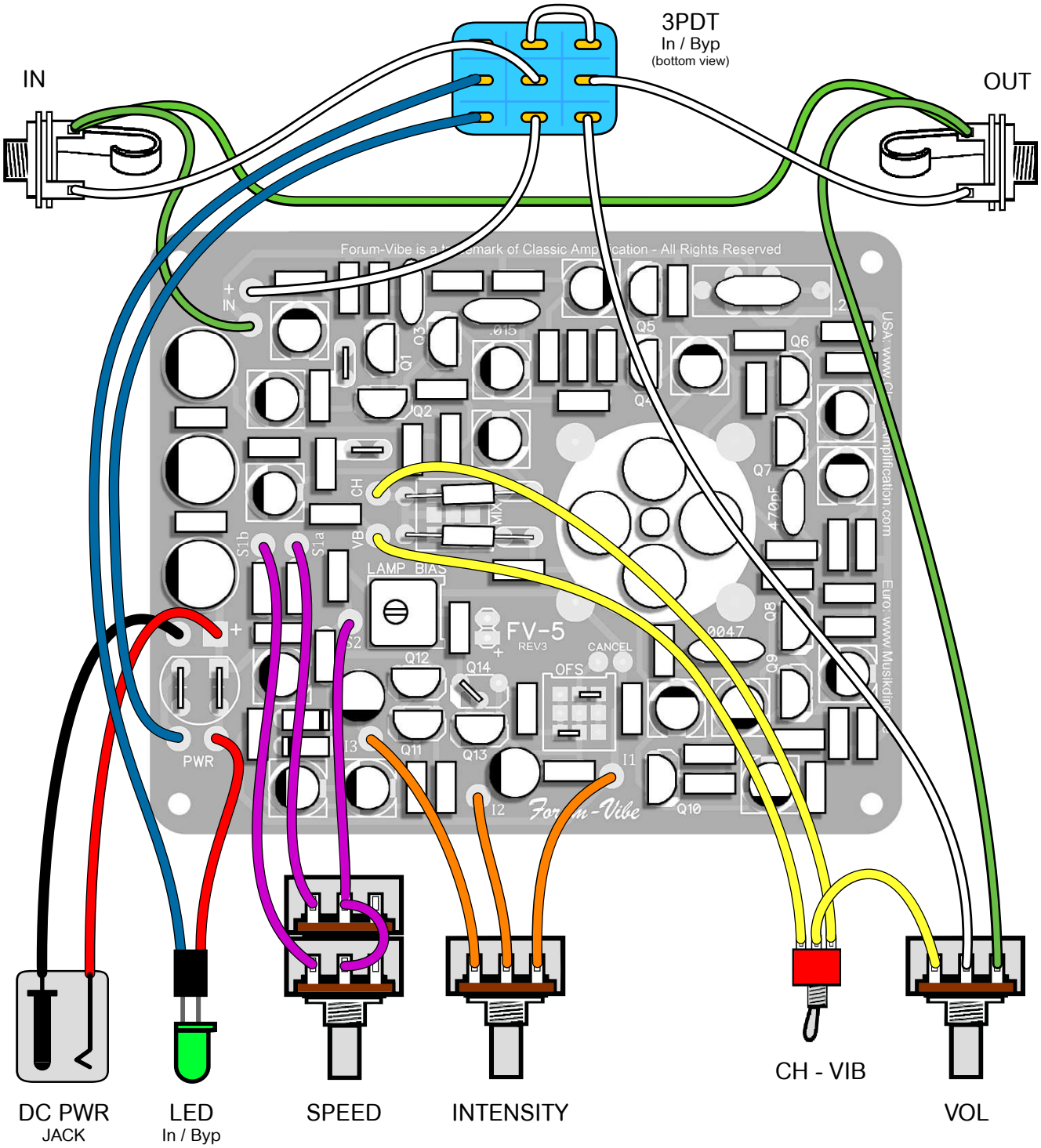
BASIC HOOKUP
True-Bypass



THE Forum-Vibe PROJECT

By: Brad Burt - *RedHouse*

Forum-Vibe Mod's

In this current document I am only including the **3 most valuable** mods (in my opinion), the rest you can find on the forums when you search for them. The Forum-Vibe circuit board can support other mods such as the darlington lamp driver mod's and others, but these are the most important...

The Bias-Offset Adjustment Mod

The Bias-Offset Adjustment mod originally contributed by JC Maillet allows the bulb/lamp's bias-offset to be adjusted, which is not to be confused with the lamp/buld transistor bias adjustment. This mod is (IMHO) the most valuable of all the mod's one can do to a vintage uni-vibe circuit. Thank you for contributing this JC.

JC's mod originally used a 250k trimpot to replace the 100k/47k voltage divider used to feed the (Q13) lamp driver transistor in the original univibe circuit. This trimpot allows the sine wave of the LFO to be adjusted finding the *sweet spot* for it and the LDRs you use. I re-aligned the implementation of this mod to allow the fully CCW position to sound as the standard uni-vibe circuit would, and when you rotate it CW it offsets the sine wave upwards allowing you to find *the sweet spot*. I also implemented a safety feature of a 4k7 resistor limiting the top of the range to keep one from turning it all-the-way-up and burning out the lamp/bulb by accident.

The Input Padding Mod

This is a mod of the input to help remedy the volume drop (suck) which a vintage uni-vibe circuit does most noticable when using true bypass switching. The R1 (22k) and R2 (47k) resistors reduce the incomming signal to about 1/3 of what it was, which is weird, and (usually) people who use uni-vibe's regularly tend to compensate for this by driving the input with some kind of boost pedal to make up for this loss. By increasing R2 value we can gain back much of the lost input signal, I recommend starting with 100k resistor and anything up to about 470k can work, but as you get higher in value (like 470k) guitars with humbuckers can sound a too woofy.

A similar mod also contributed on the forums (by RG) changed R10 to 910-Ohms to change the gain, and it works, but is un-needed if we just remove the input padding from choking down the signal.

The Output Mix Mod

This *Output Mix* mod which (I believe) was originally contributed by RG, allows tweaking the wet/dry mix of the output. The original mod called for a 200k pot replacing the two 100k mix resistors (R34 and R35) the standard uni-vibe circuit uses. While this does work, in practice the 200k pot turns out to be much too coarse of an adjustment to dial-in.

So to fix this, the Forum-Vibe implementation uses two 47k resistors which feed into the wiper of a 100k trimmer so we still maintain our 200k total mix value but narrows the fine-tune adjustment range to a more usefull area. This mod can let you fine-tune the amount of whoop-dee sound (vibrato) the chorus effect contains while not changing the sound of the vibrato mode. Some people really like the over-the-top whoop-dee sound on the end of the sweep but please note that genuine vintage uni-vibe's didn't normally sound this way in chorus mode.

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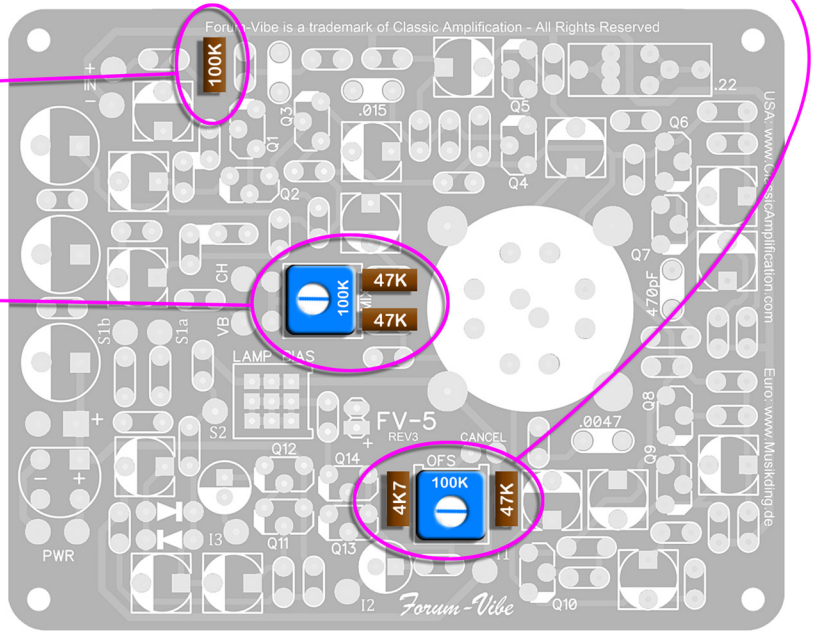
The 3 most valuable mod's to make

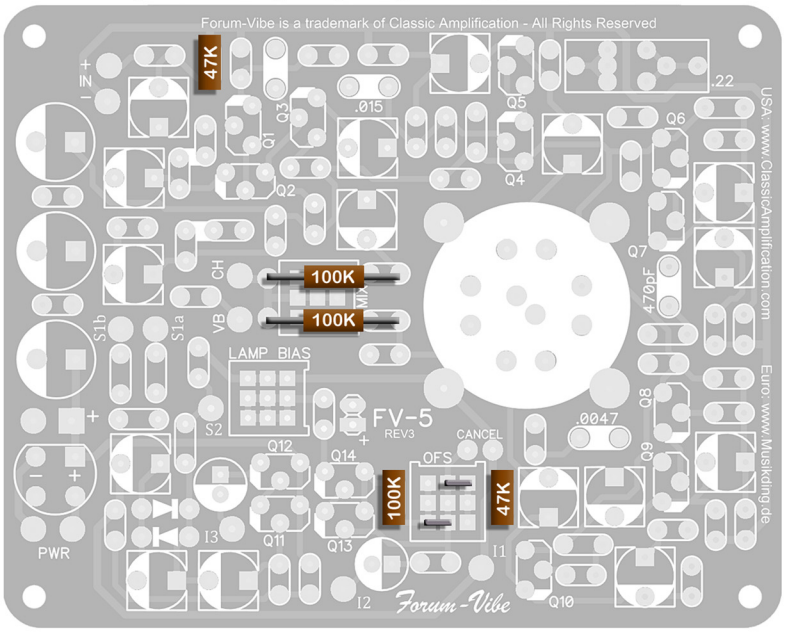
The #1 most valuable *Offset Mod* is shown here:
100k Trimmer, 4k7 and 47k Resistors

#2 *Input Pad* Mod
100k to 470k

#3 *Output Mix* Mod
100k Trimmer
2x 47k Resistors



Compare with original (vintage build) parts shown below:



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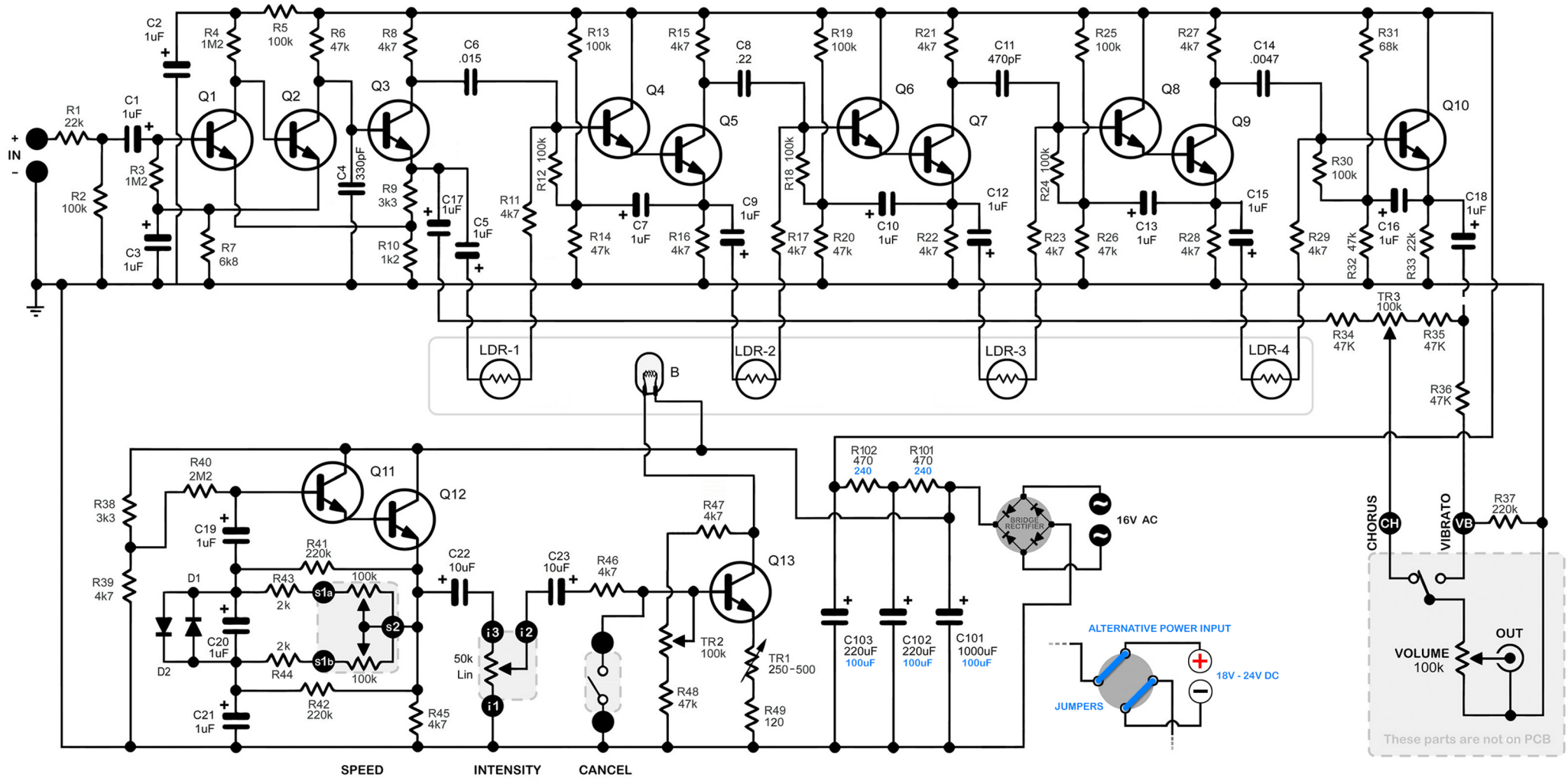
FV-5 rev3 SCHEMATIC

MOD Build



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