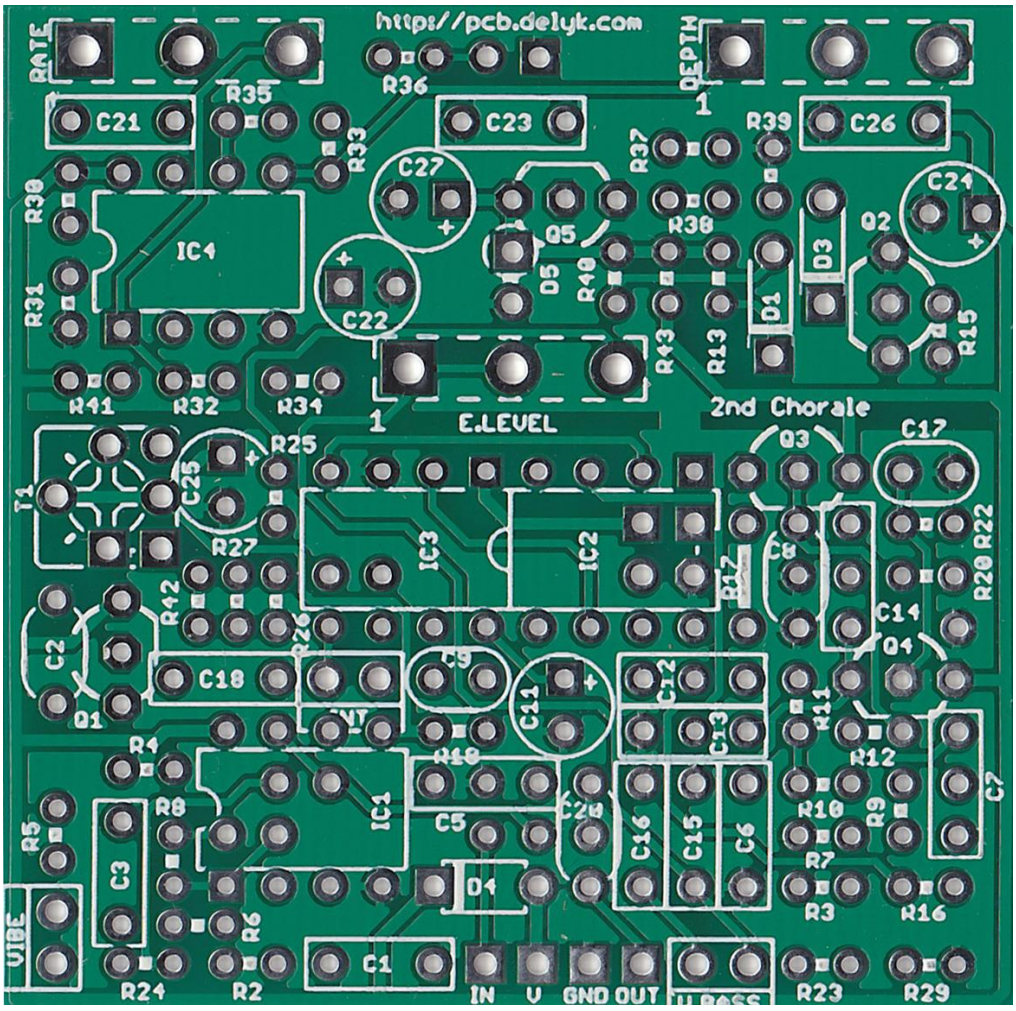


2nd Chorale

Build Document

Introduction

You guys remember the awesome chorus sounds of the 80s and 90s? (For your viewing pleasure, check out: https://youtu.be/qUpjDAJ-nEY.) This is one awesome, wet-sounding chorus!

I made this board specifically because the madbean Pork Barrel didn't have all of the mods I wanted. If you don't need mods (and while it is silly business to point to another), I suggest you check out madbean's Pork Barrel.

I highly recommend reading over the Pork Barrel documentation. Brian is much better than me at documentation.

Bill of Materials

Resistors

P/N	Value
R1	1M
R2	1k
R3	470k
R4	10k
R5	47k
R6	10k
R7	10k
R8	47k
R9	100k
R10	10k
R11	10k
R12	10k
R13	2k7
R14	10k
R15	33k
R16	4k7
R17	56k
R18	330k
R19	10k
R20	10k
R21	10k
R22	10k

P/N	Value	Notes
R23	1M	
R24	47k	
R25	47k	
R26	47k	
R27	10k	
R28	470R	
R29	100k	
R30	10k	
R31	10k	
R32	47k	
R33	10k	
R34	33k	
R35	1M	
R36	1k	Rate LED CLR.
R37	220k	
R38	4k7	
R39	4k7	
R40	150k	
R41	4k7	
R42	4k7	
R43	33R	

Diodes

P/N	Value	Notes
D1	1N914	
D2	LED	Rate LED. Not necessary, but it's cool. (If omitting, you can also omit R36.)
D3	1N914	
D4	1N5817	
D5	Optional Zener	If using MN3007, you can use a 15v Zener. Otherwise, 9v1. (There's no reason you can't use a 9v1 on the MN3007, as long as you don't use a PSU greater than 9v.)

Capacitors

I obtained all of my caps from Tayda. That's what the layout was setup for.

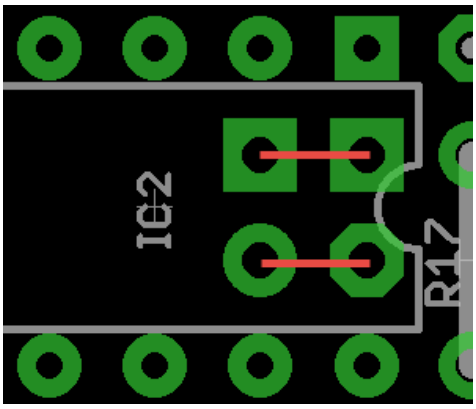
P/N	Value	Type	Notes
C1	47n	Film Box	
C2	470n/1u	MLCC	TonePad uses 470n. PorkBarrel uses 1u.
C3	6n8	Film Box	
C4	100p	Ceramic	
C5	33n	Film Box	
C6	3n3	Film Box	
C7	8n2	Film Box	
C8	470p	Ceramic	
C9	100p	Ceramic	If no intensity mod, omit.
C10	47p	Ceramic	
C11	1u	Aluminum Electrolytic	
C12	33n	Film Box	
C13	3n3	Film Box	
C14	8n2	Film Box	
C15	33n/12n	Film Box	If no wet bass mod, 33n. Otherwise, 12n.
C16	22n	Film Box	If no wet bass mod, omit.
C17	470p	Ceramic	
C18	6n8	Film Box	
C19	100p	Ceramic	
C20	1u	MLCC	
C21	100n	Film Box	
C22	47u	Aluminum Electrolytic	
C23	10n	Film Box	
C24	100u	Aluminum Electrolytic	
C25	47u	Aluminum Electrolytic	
C26	100n	Film Box	
C27	220u	Aluminum Electrolytic	

Integrated Circuits

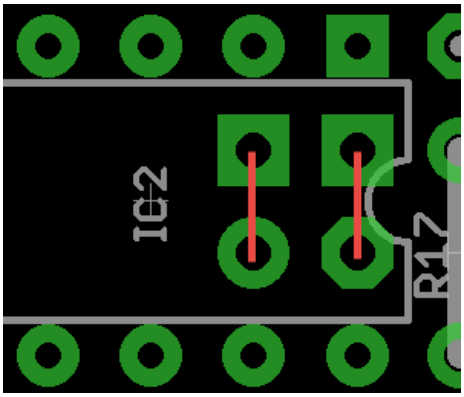
Before you solder the IC sockets, we have to set a jumper! There's no silkscreen, so don't forget this. Failure to do so means "it ain't gonna work, Jack!"

Beneath IC2, there are four pads: 2 square, 1 round, and 1 octagonal (ground).

MN3007, set the jumpers horizontal.



MN3207, v3207, BL3207, set the jumpers vertical.



P/N	Value	Notes
IC1	4558	
IC2	BBD	MN3007, MN3207, v3207, BL3207 The MN3007 has a max vDC of 15v. The rest are 10v.
IC3	Clock	MN3101, MN3102, v3102, BL3102 The MN3101 has a max vDC of 15v. The rest are 10v. The clocks must match the proper BBD. e.g. – MN3007/3101 or v3207/v3102, etc.
IC4	TL062	

Transistors

I obtained all of my transistors from Tayda. That's what the layout was setup for.

P/N	Value	Notes
Q1-Q5	2N5088	

Potentiometers

P/N	Value	Notes
DEPTH	B100k	
E.LEVEL	C250k	Optional. If you exclude it, jump 2 and 3. Note: If getting this pot from Tayda, consider getting the C500k and using a ~500k resistor across lugs 1 and 3. For what it's worth, I used a B250k; if I were to do this again, my OCD would rather me get a true C250k.
RATE	B100k	
T1	10k	Trimpot.

Switches

I obtained all of my switches from Tayda. That's what the layout was setup for.

OK, sure, I say they are SPST, but that's just technical. Get the SPDT ON-ON.

P/N	Value	Notes
INT	SPST	If you don't want this, omit.
VIBE	SPST	If you don't want this, **jumper it**.
WET_BASS	SPST	If you don't want this, omit.

Other Parts

Qty	Value	Notes
7	8-pin socket	4 for the ICs, 3 for the transistors (optional).

Modifications

Effect Level

Needed to convert this to a CE-2B. Use in conjunction with the Wet Bass mod. If you don't want it, jump pads 2 and 3.

Intensity

Not enough chorus? Not a problem. Just use C9 and a SPDT wired to the INT pads (hidden between IC1 and IC3). When the pads are jumped, INTENSE chorus. When the pads are lifted, back to normal.

Consider socketing C9 and trying different values to see what works best for you.

Vibe

Turn the chorus into a vibrato. Just use a SPDT wired to the VIBE pads. When the pads are jumped, normal chorus. When the pads are lifted, vibrato. (Note: It is normal to hear a volume drop.)

Wet Bass

This is needed to get your pedal to the same specs as the CE-2B. It modifies the bass response on the modulated signal. The CE-2B uses a 12n cap instead of a 33n (used by the CE-2). So, if you want to switch between the two, use a 12n for the bass, then add 22n (12 + 22 = 34, which is almost 33) for the guitar. Tada!

When the pads are jumped, the specs are CE-2. When the pads are lifted, the specs are CE-2B.

Build Notes

Suggested Solder Order

Coming soon.

Until then, please, oh for the love of all that is good, please, preplan the soldering. There are a few components on back.

Biasing

(Excerpt from Pork Barrel doc):

"Set your Rate knob to its midpoint and the Depth knob to maximum. Adjust the T1 trimmer until you get the maximum chorus effect with minimal distortion."

Boxing It Up

If you use any of the mods, it'd be wise to use offboard pots, because the switches will not fit under the board. No mods? Use onboard pots.

Recap

This was a bunch of information, huh? Let me try to summarize and recap.

Do you want a pedal as close to the original CE-2 without mods?

- Only use DEPTH and RATE pots.
- Jump E.LEVEL pins 2 and 3.
- Jump VIBE.
- Omit R36, D2, C9 and C16.
- C15 is 33n.

Do you want a CE-2B without any mods?

- Use all three pots.
- Jump VIBE.
- Omit R36, D2, C9, and C16.
- C15 is 12n.

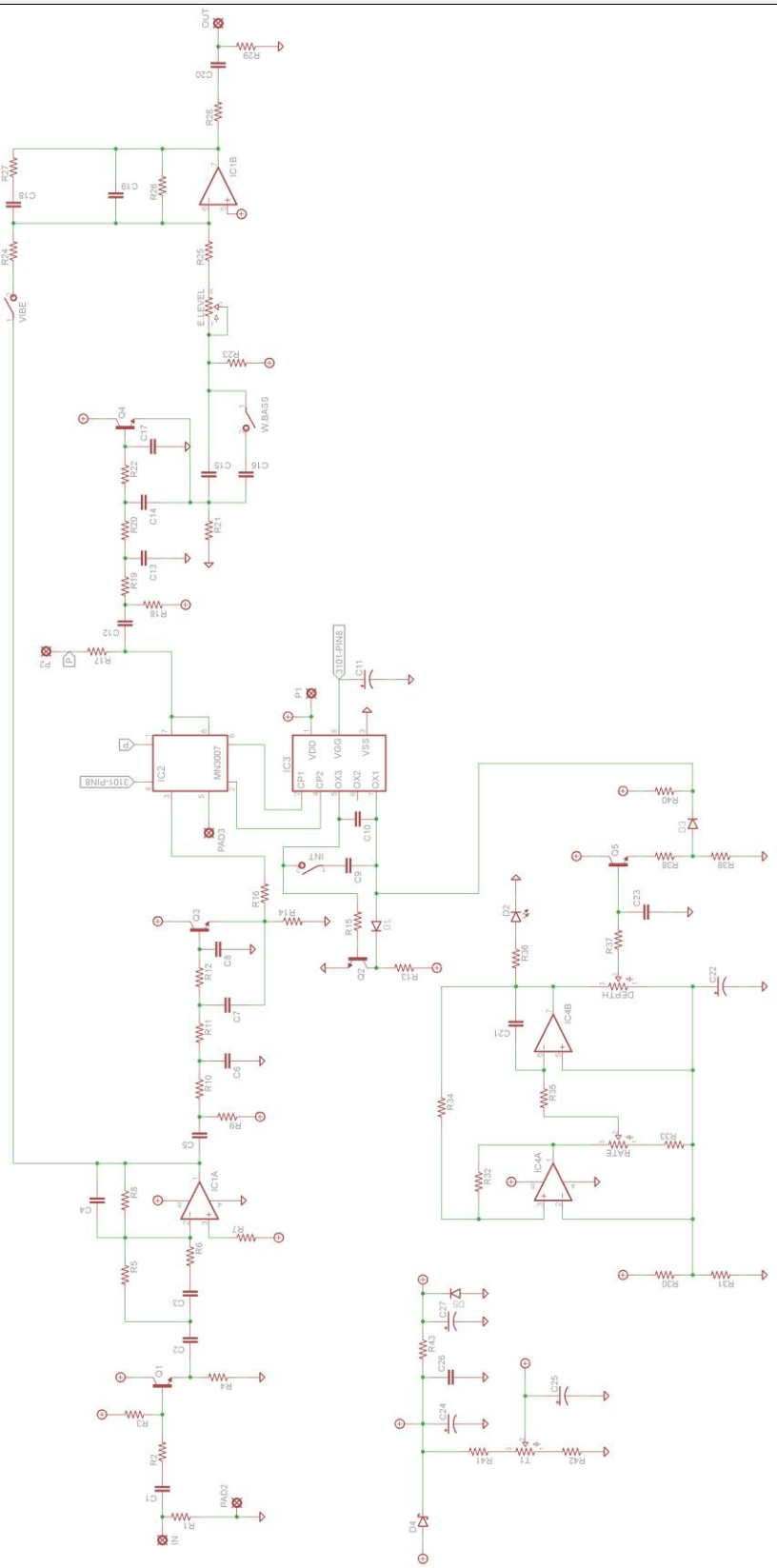
Do you want a CE-2 that can also be a CE-2B without other mods?

- Use all three pots.
- Jump VIBE.
- Omit R36, D2, and C9.
- C15 is 12n.
- C16 is 22n.
- Use a SPST on WET_BASS pads.

Do you want the ultimate CE-2? (I do!)

- Use all three pots.
- C15 is 12n.
- C16 is 22n.
- Use a SPST on VIBE, INT, and WET_BASS pads.

Schematic



Images