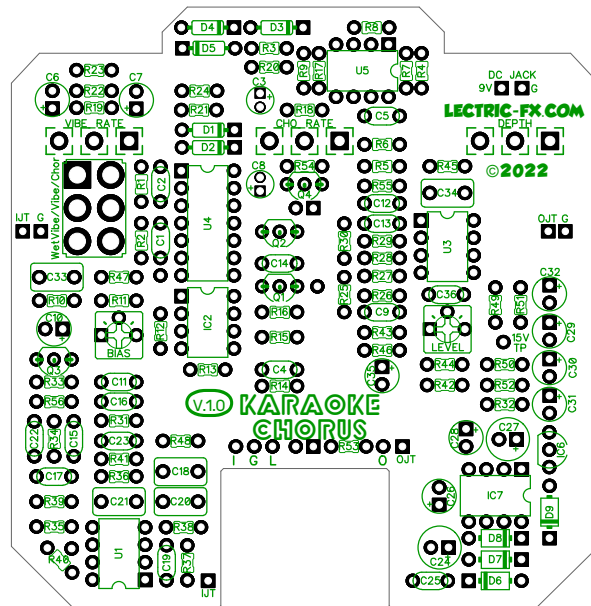


KARAOKE CHORUS

Lectric-fx 2022

Based on the legendary Boss CE-1



The Karaoke chorus is an original design heavily inspired by the legendary CE-1 Chorus. Originally designed for keyboards, this circuit takes the core of the CE-1 and strips it down to a smaller, guitar friendly circuit that is far cheaper and easier to build for the average DIYer while still providing a lot of the sounds that make the original so revered.

So what's changed?

- The circuit now runs from a standard +9V DC supply, internally boosted to +15V, so no need for expensive power bricks or AC supplies to achieve the originals split +/-14V supply.
- A relatively cheap and easily obtained MN3007 is used in place of the original's expensive and hard to come by MN3002, run at twice the clock frequency to achieve the same delay times, this also substantially reduces noise in the circuit by improving the sampling rate.
- No noise gate required! Due to the aforementioned noise improvement from doubled clock frequency, the improved S/N ratio of the MN3007 and no longer necessitating an 8dB+ signal recovery as with the MN3002, the noise gate circuit was easily removed, simplifying the circuit while keeping the noise levels as good or better than many other chorus pedals.
- The transistor based clock circuit has been replaced with a CMOS based design that works on the same principle but is much simpler, again reducing the circuit complexity while being more efficient at driving the MN3007 BBD.
- The input level control is removed and fixed at a suitable level for most pickups while simultaneously, input impedance has been improved, preventing the high roll off the keyboard focused original had when used with guitar, but not so high as to become obnoxiously bright.

What's the same?

- The LFO design, apart from a minor tweak to accommodate the new supply voltage & clock is essentially unchanged, providing the originals triangle & sine wave LFO shapes.
- The audio filtering remains the same as the original, with a few minor additions to help simulate the original's overall sound.
- The same lush chorus & vibrato sounds.

What's new?

- The depth control now acts as a master depth, allowing you to use it in both chorus & vibrato mode (as opposed to the original only employing it in vibrato mode).
- A dry lift vibrato mode. The original vibrato mode simply switched to a faster sine wave LFO circuit, this option is retained and an additional 3rd mode offering true pitch vibrato is now included via the toggle.
- Buffered output, more suitable for a modern pedal board.

What's in the future?

The CE-1 is dear to a lot of peoples hearts and means different things to different people, we hope over time the DIY community will come up with their own suggestions of how to get even closer to the original sound so please check back now and then for any suggested tweaks and consider joining <https://www.madbeanpedals.com/forum/index.php?board=69.0> to voice your own thoughts & suggestions.

Set up procedure:

- Start by adjusting both trimmers to their mid points and switch to the down position (wet only vibrato) on the mode toggle. Set vibrato & chorus rate CCW and depth CW.
- While playing through the pedal, adjust the bias trim until the vibrato effect is heard and then further tweak it for the least distortion with regular playing.
- Switch to the upper position on the mode toggle (chorus) and adjust the level trim to match your bypass level.

That's all there is to it!

Note - A test pad is also provided next to Q1 should you wish to adjust the BBD bias via scope or audio probe.

Stereo Output:

While the Karaoke was designed and intended as a mono chorus pedal, if you desire a dry only output for stereo use, a pad is provided at U1 Pin 7. Simply attach the positive of a 4u7 electro to the pad, attach a 12k resistor from the negative to the new output and a 2k7 resistor from the output to ground.

Note - This mod has not been tested and the resistor values may need to be tweaked to achieve a level equal to bypass.

1/8W RESISTORS

B.O.M.

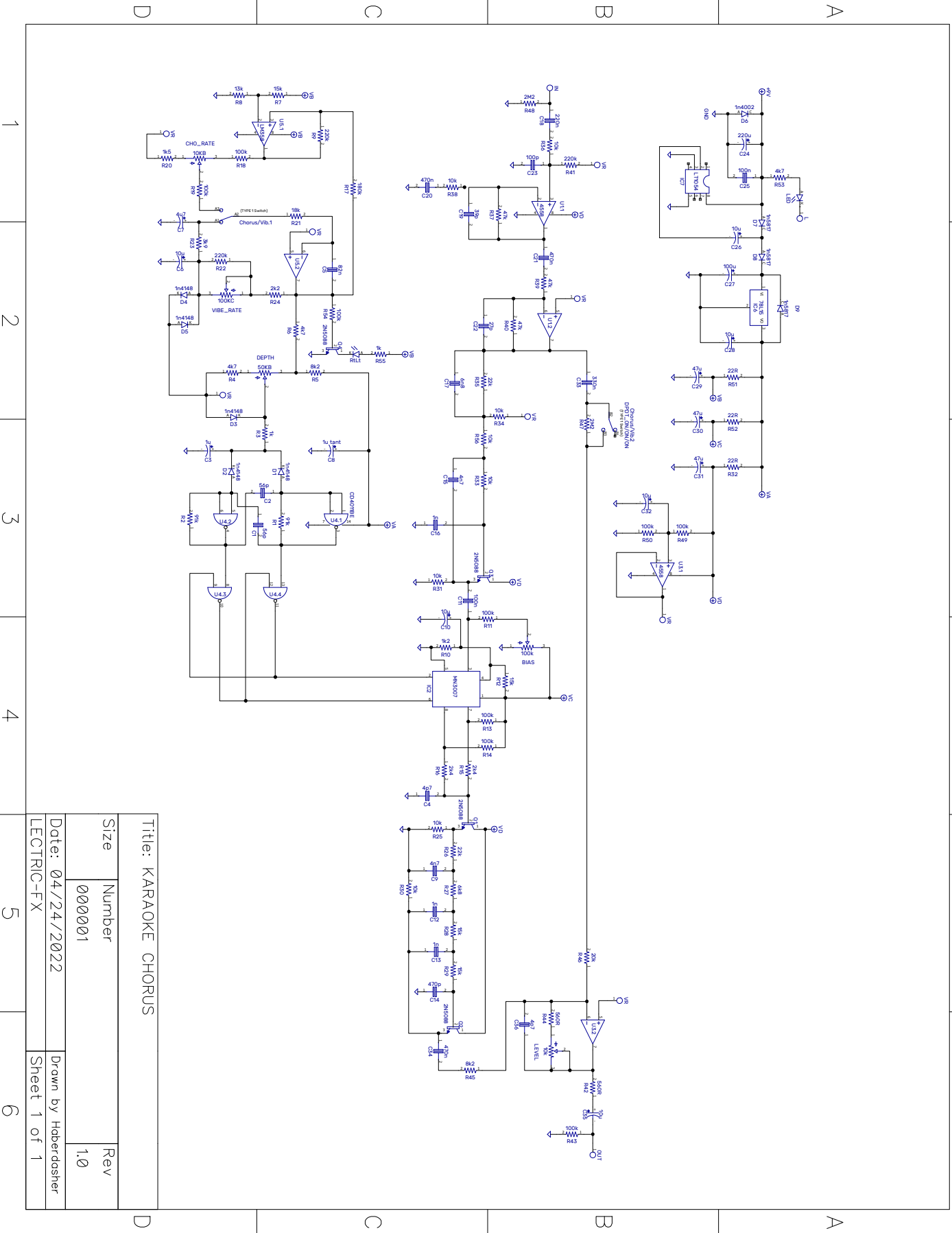
R1	91k	R36	10k	C14	470p	ICS		
R2	91k	R37	47k	C15	4n7	U1	JRC4558	
R3	1k	R38	10k	C16	1n	IC2	MN3007	
R4	4k7	R39	47k	C17	6n8	U3	JRC4558	
R5	8k2	R40	47k	C18	220n	U4	CD4011BE	
R6	4k7	R41	220k	C19	39p	U5	LM358	
R7	15k	R42	560R	C20	470n	IC6	78L15	
R8	13k	R43	100k	C21	470n	IC7	LT1054	
R9	220k	R44	560R	C22	27p	TRANSISTORS		
R10	1k2	R45	8k2	C23	100p	Q1	2N5088	
R11	100k	R46	20k	C24	220u	Q2	2N5088	
R12	15k	R47	2M2	C25	100n	Q3	2N5088	
R13	100k	R48	2M2	C26	10u	Q4	2N5088	
R14	100k	R49	100k	C27	100u	POTS		
R15	2k4	R50	100k	C28	10u	VIBE_RATE	100KC	
R16	2k4	R51	22R	C29	47u	CHO_RATE	10KB	
R17	180k	R52	22R	C30	47u	DEPTH	50KB	
R18	100k	R53	4k7	C31	47u	TRIMMERS		
R19	100k	R54	100k	C32	10u	BIAS	100k	
R20	1k5	R55	1k	C33	330n	LEVEL	10k	
R21	18k	R56	10k	C34	470n	SWITCH		
R22	220k	CAPS		C35	10u	Chorus/Vib	DPDT ON/ON/ON	
R23	3k9	C1	56p	C36	4p7	<p>The Chorus/Vib switch must be a "TYPE 1" ON/ON variety. Type 2 will not work correctly in this circuit! If you're unsure of the type you have, the following graphic will show you where you should have continuity. FWIW, Tayda part A-1840 is type 1; the others I've tried there are all type 2.</p>		
R24	2k2	C2	56p	DIODES				
R25	10k	C3	1u electro	D1	1n4148			
R26	22k	C4	4p7	D2	1n4148			
R27	6k8	C5	82n	D3	1n4148			
R28	15k	C6	10u	D4	1n4148			
R29	15k	C7	4u7	D5	1n4148			
R30	10k	C8	1u tant	D6	1n4002			
R31	10k	C9	4n7	D7	1n5817			
R32	22R	C10	10u	D8	1n5817			
R33	10k	C11	100n	D9	1n5817			
R34	10k	C12	1n	LED	Indicator			
R35	22k	C13	1n	RtLt	RATE LED			

QTYs

RESISTORS	
3	22R
2	560R
2	1k
1	1k2
1	1k5
1	2k2
2	2k4
1	3k9
3	4k7
1	6k8
2	8k2
8	10k
1	13k
4	15k
1	18k
1	20k
2	22k
3	47k
2	91k
9	100k
1	180k
3	220k
2	2M2

CAPS	
2	4p7
1	27p
1	39p
2	56p
1	100p
1	470p
3	1n
2	4n7
1	6n8
1	82n
2	100n
1	220n
1	330n
3	470n
1	1u electro
1	1u tantalum
1	4u7
6	10uF
3	47uF
1	100uF
1	220uF

DIODES	
5	1n4148
1	1n4002
3	1n5817
2	LED
ICs	
1	CD4011BE
2	JRC4558
1	LM358
1	MN3007
1	LT1054
1	78L15
TRANSISTORS	
4	2N5088
Pots	
1	10KB
1	50kB
1	100KC
TRIMMERS	
1	10K
1	100K
SWITCH	
1	DPDT ON/ON/ON

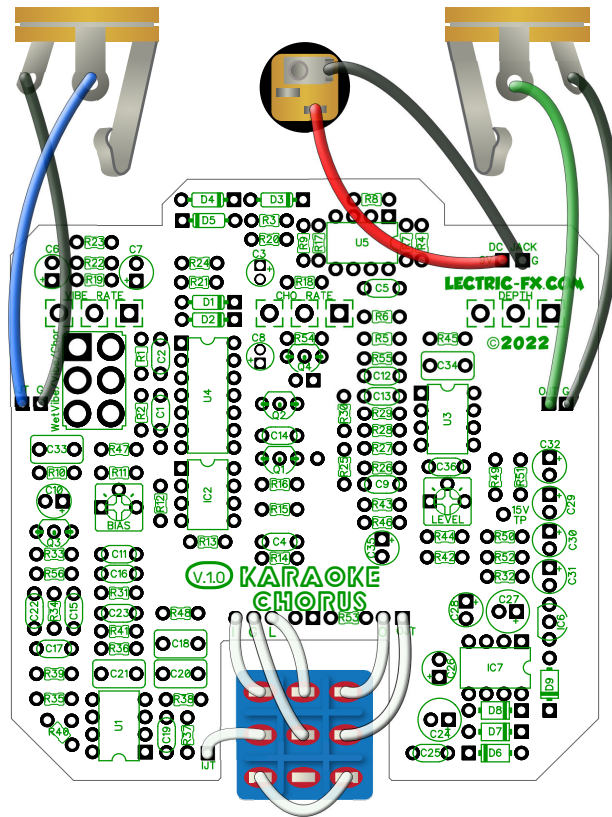


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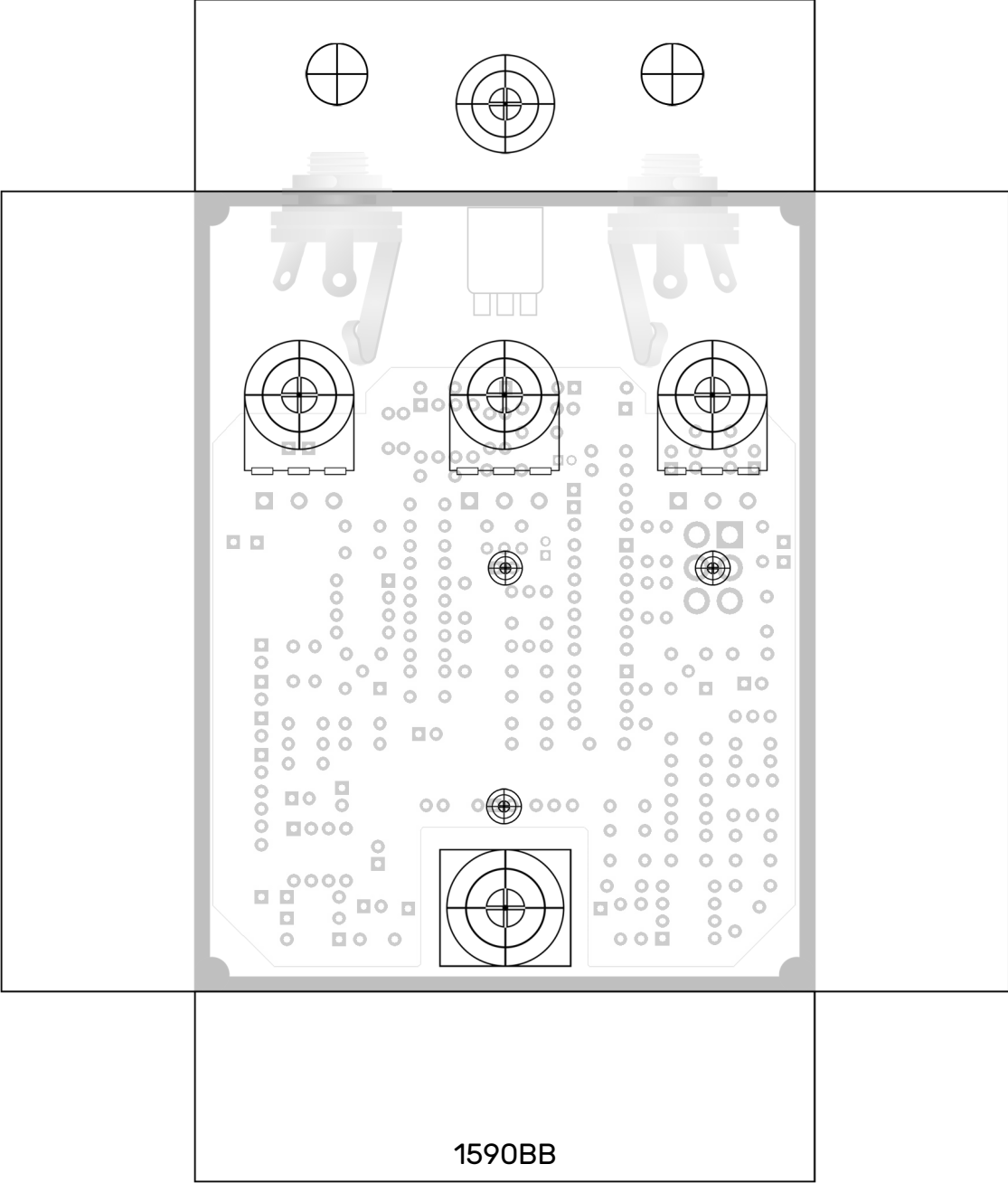
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Date: 04/24/2022
 LECTRIC-FX
 Drawn by Heberdosher
 Sheet 1 of 1

WIRING SUGGESTION



DRILL TEMPLATE



1590BB