

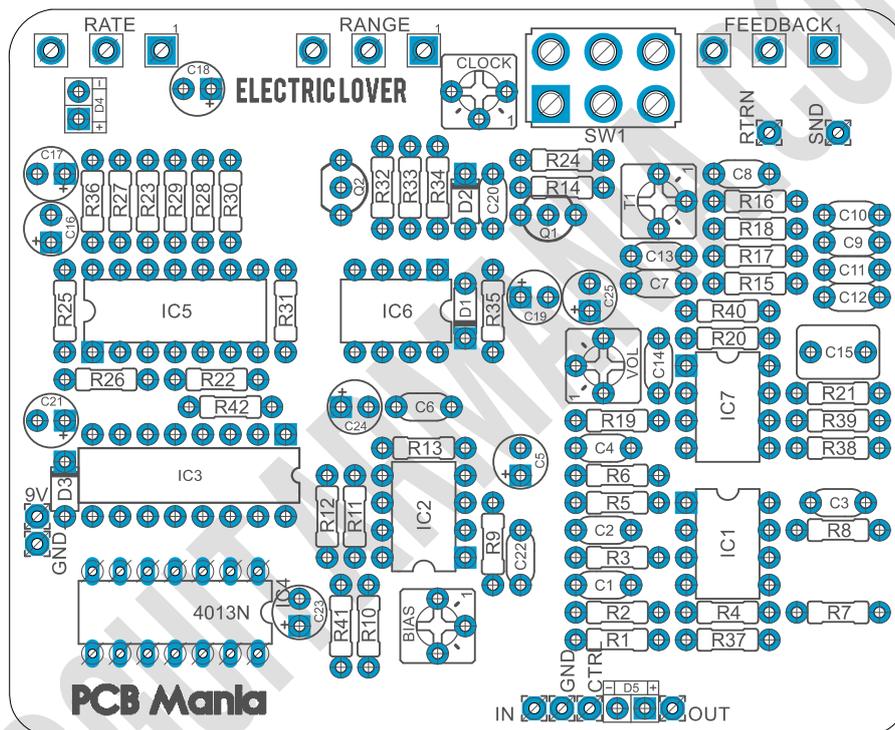
Electric Lover

Based on EHX's Electric Mistress

Flanger

By PCB Guitar mania Mania

[Project link](#)



Based on EHX Electric Mistress, adapted for the right functionality at 9v.

It offers very warm and rich flanging while maintaining low noise operation and flexibility in its controls.

Featuring the following additions to the original circuit:

- A buffered clock signal to the BBD
- FX loop for through-zero flanging
- Output gain stage to match or exceed the bypass volume.

BOM

R1	5k6	C1	39n
R2	1m	C2	47n
R3	5k6	C3	1n
R4	1m	C4	100n
R5	470r	C5	10u Electrolytic
R6	4k7	C6	680pf
R7	100k	C7	68n
R8	5k6	C8	220n
R9	100k	C9	47n
R10	82k	C10	47n
R11	4k7	C11	3n3
R12	4k7	C12	2n2
R13	47k	C13	220n
R14	10k	C14	100pf
R15	8k2	C15	1u
R16	13k	C16	33u Electrolytic
R17	470r	C17	33u Electrolytic
R18	470r	C18	1u Electrolytic
R19	10k	C19	1u Electrolytic
R20	470r	C20	22pf
R21	100k	C21	220u Electrolytic
R22	39k	C22	100n
R23	24k	C23	100u
R24	8k2	C24	100u Electrolytic
R25	10k	C25	10u Electrolytic
R26	30k		
R27	3k9	Semiconductors	
R28	47k	IC1	JRC4558
R29	27k	IC2	MN3007
R30	15k	IC3	CD4049
R31	33k	IC4	4013N
R32	62k	IC5	LM324
R33	1m2	IC6	LM311N
R34	3k9	IC7	JRC4558
R35	10k	Q1	2N3904
R36	1k	Q2	2N5087
R37	4k7		
R38	200k	Pots	
R39	200k	FEEDBACK	10k B
R40	1k	RANGE	100k B
R41	22r	RATE	1m C
R42	22r		

		Trimpots	
Diodes		T1	10k
D1	1n914	VOL	50k
D2	1N4007	CLOCK	10k
D3	1n5817	BIAS	100k
D4	LED 3mm		
D5	LED 3mm		

Shopping list

Resistors		Diodes		
4	10k	R14, R19, R25, R35	2 LED.1	D4, D5
1	1m2	R33	1 1n5817	D3
2	22r	R41, R42	1 1n914	D1
1	24k	R23	1 1N4007	D2
1	27k	R29		
2	3k9	R27, R34	Semiconductors	
1	39k	R22	1 CD4049UBE	IC3
4	4k7	R6, R11, R12, R37	2 JRC4558	IC1, IC7
1	82k	R10	1 LM311N	IC6
2	8k2	R15, R24	1 LM324	IC5
3	5k6	R1, R3, R8	1 mn3007	IC2
1	62k	R32	1 4013N	IC4
3	100k	R7, R9, R21		
1	30k	R26	1 2N3904	Q1
1	33k	R31	1 2N5087	Q2
4	470r	R5, R17, R18, R20		
2	47k	R13, R28	Potentiometers	
2	1k	R36, R40	1 100k B	RANGE
2	1m	R2, R4	1 10k B	FEEDBACK
1	13k	R16	1 1m C	RATE
1	15k	R30		
2	200k	R38, R39	Trimmers	
			1 50k	VOL
			1 100k	BIAS
Capacitors			2 10k	CLOCK, T1
2	100n	C4, C22		
1	100pf	C14		
1	1u	C15	Switches	
2	220n	C8, C13	1 DPDT ON- ON	
1	22pf	C20		
1	1n	C3	Electrolytics	
1	39n	C1	2 100u electrolytic	C23, C24

3	47n	C2, C9, C10	2	10u electrolytic	C5, C25
1	3n3	C11	2	1u electrolytic	C18, C19
1	680pf	C6	1	220u electrolytic	C21
1	68n	C7	2	33u electrolytic	C16, C17
1	2n2	C12			

Calibrating

For the correct operation of the Electric lover must be calibrated properly, adjusting the Clock and Bias trimmers, both works independently but will need re-adjustment through the calibration process.

The Clock trimmer is really reactive, so be prepared to spend some time dialing the sweet spot.

Don't be intimidated by all the following steps regarding the calibrating process. Is actually simpler than it how it looks like, we ensured to write it in the most comprehensive way, explaining the function of each trimmer and each knob on this build.

First of all, before plugging the board to your guitar an amp, before plug in to DC, you must follow these steps. (There is no problem if you have already connected; we suggest doing this before so you won't have to deal with all the extra wires around)

1. Set **Clock** and **Bias** in the middle, at 12 o'clock.
2. Set **T1** and the **Rate** knob fully counter clockwise
3. Set **Range**, **Volume** and **Feedback** in the middle, 12 o'clock.
4. Filter Switch pointing to the right position.
5. Plug in your guitar and amp to the board, and the DC power supply, this project works great at 12V, but also could be feed with an standard 9v power supply. Never plug it on 15v, this would be risky for the **MN3007**.
6. Now the signal should be going through the effect, although you may not hear any flanging yet. If you can't hear any signal through the effect, double check all your solder points, components on connections to ensure everything is okay.
7. In order to get the flanging effect to show up, adjust the **Bias** trimpot. This trimmer is in charge of feeding the **BBD MN3007**. You don't need to be extremely precise with this one, just till you hear the flanging effect and the BBD working.
8. Adjust the **Clock** Trim pot. As we said before, this trimmer is pretty sensitive. Set it up to the point where you achieve a wide sweep with minimum noise. If the flange starts to whine or "chirp" at the extremes of its sweep you will need to do a little more adjustment.
9. Go back and tweak the **Bias** trim pot further clockwise until you get smooth up and down flange without distortion.

10. With **T1**, we can control the maximum of **Feedback** desired, as this trimmer acts as limiter to the maximum allowed. Set Feedback at max, fully clockwise, then start adjusting T1 as you get the maximum desired feedback.
11. Once we have almost everything set-up, use your ears to make the final adjustments on the trimmers while testing the limits of Rate, Range, and Feedback.

The most important thing to set up here is the **Clock** Trimmer; it will help you to avoid unwanted noises at the extremes of the flanging when you set Range, Feedback and Rate at max.

Most of the adjustment occurs during the first quarter of the trimmer, take your time with the set-up and you will definitely hear a big difference on it.

Loop effect

The Electric lover has been designed with an optional effect loop. You could wire it just by adding two mono Jacks to the pads **Rtrn** and **Snd** .

This loop works in parallel with the delay line and allows you to experiment with crazy and unusual sounds by plugging some other effect.

Feel free to experiment with as many modulations units you want to, Phasers, delays, chorus, or even some other external flangers, in order to achieve your unique tone.

General Building notes

To populate the PCB it's recommended to follow this order.

1. Resistors & diodes
2. IC Sockets (set up the proper IC at last)
3. Capacitors, starting with the smaller ones and the ceramic ones.
4. Electrolytic capacitors (always check the polarity)
5. Transistors
6. Wires
7. Potentiometers
8. Off board wiring