SINGLE JERKOFF V1.0 *JAN2014*
nonlinearcircuits

This circuit is based on a Jerk chaos design by J. Sprott and modified for practical use as a synth module.

Your choice of resistors and caps will affect the central frequency of the circuit (pots centred, nothing on the inputs). Whatever value you choose for resistors, select the jerk & wiggle pots to be approx. double this value. The input pot should be 47k-100k.

For example I used 47k resistors, 100k pots and 1uF caps, giving a base frequency of approx. 2.5Hz. If you want to slow things down, try 100k resistors, 200k pots and 1uF caps. If you want it really slow try electro caps but they *must* be non-polarised (usually marked BP)

The circuit will operate at much faster and slower frequencies depending on the input signal and pot settings, the choice of components just sets the 'base' frequency.

The unmarked resistors are the ones to fill with the value you choose.

There are four **types of caps** on the PCB;

The two electros near the power connector can be 10uF 25V (or higher voltage rating)

The small rectangular caps (2.5mm spacing) are for decoupling and can be anything from 10nF-100nF

The larger rectangular caps are the ones you choose to set the base frequency of each circuit (3 per circuit), 1uf is a good value.

ICs are TL074, Any std. quad op-amp will be ok. Yes the schematic is marked LM324 but I would say use a TL074 instead as the PCB indicates.

The LED nearest pin 14 of the upper TL074 is an important part of the circuit and must be installed, probably best on the PCB but you could try a superbright and bring it to the panel. I use red LEDs here, other LEDs with a different V_{on} will work and give slightly different behaviour. You could even try 1N4004, Ge diodes, etc….might be interesting …or maybe not.

The other 2 LEDs indicate what the circuit is doing. The current limiting resistors associated with these are marked RL. I used 1k, if your LEDs are superbrights, choose a larger value, say 10k. One Muff member, Nigel, suggested wiring superbright LEDs directly to the outputs via 10k-33k resistors.

The circuit has **outputs**: X, Y, Z and **input** 'in'.

Typically the output signals range between +/- 5V, though some pot settings will encourage excursions beyond this. Other pot settings may make the circuit stop or result in a very small signal. Generally it will produce mad shit most of the time.

For your panel, the 3 pots are spaced 1 inch apart. The PCB is approx. 30mm x 72mm.

I use 100k pots from Song Huei - R0903N-B100k, L-25KC (the 25 is the length L).

 It seems a pretty common footprint. Another pot that fits is this one from Tayda Electronics for 67c
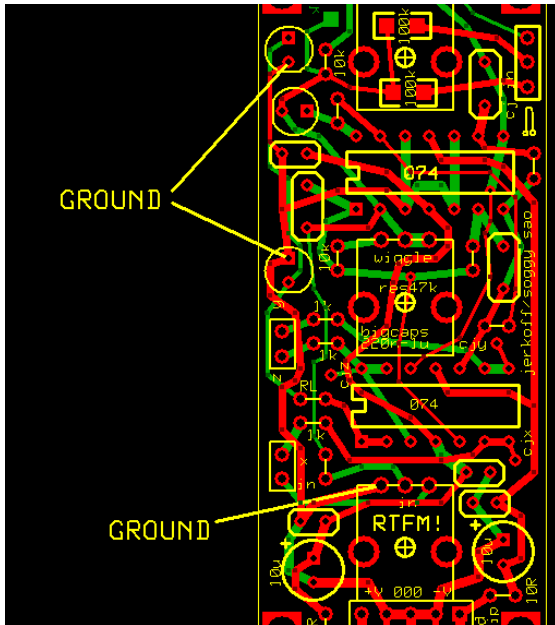

You should find similar types from Mouser, Rapid, etc.

POT range The jerk and wiggle pots are rheostats placed in series with 10k resistors. The relevant resistors are next to the pots on the PCB. As indicated in the schematic, these resistors can be as low as 1k if you like. Using 10k means the circuit will oscillate at nearly every pot setting. Using 1k gives more range but you may find some dead zones where the circuit does not oscillate. These can be interesting too, especially if you start injecting triggers thru the input.

GROUND Connection

There is no dedicated ground connection on the PCB, guess I have been building with bananas for too many years and forgot it. If not installing the PCB mount LEDs, you can use the unused holes for ground. Otherwise use the ground pin of the input pot, it should be easy enough to solder a wire onto it. See image below:

for PCB A:

1. cjx is connected to PCB B
2. cjy is connect to PCB C
3. cjz is connect to PCB D

for PCB B:

1. cjx is connected to PCB C
2. cjy is connect to PCB D
3. cjz is connect to PCB A

Soggy Sao / Circle Jerk

There is a provision to connect 4 Jerkoff PCBs together to modulate and affect it each other. The 3 pin input is marked "cj in" near the penis in the upper right corner of the PCB. Each PCB has outputs marked "cjx, cjy & cjz", these are direct outputs from the op-amps and are intended for internal use, not to be connected to the panel.

There are also three 1206 sized surface mount 100k resistors that only need to be installed if desiring the soggy sao mode.

To wire up for Soggy Sao, mark the PCBs – A, B, C, & D

As shown in the diagram below

for PCB C:

1. cjx is connected to PCB D
2. cjy is connect to PCB A
3. cjz is connect to PCB B

for PCB D:

1. cjx is connected to PCB A
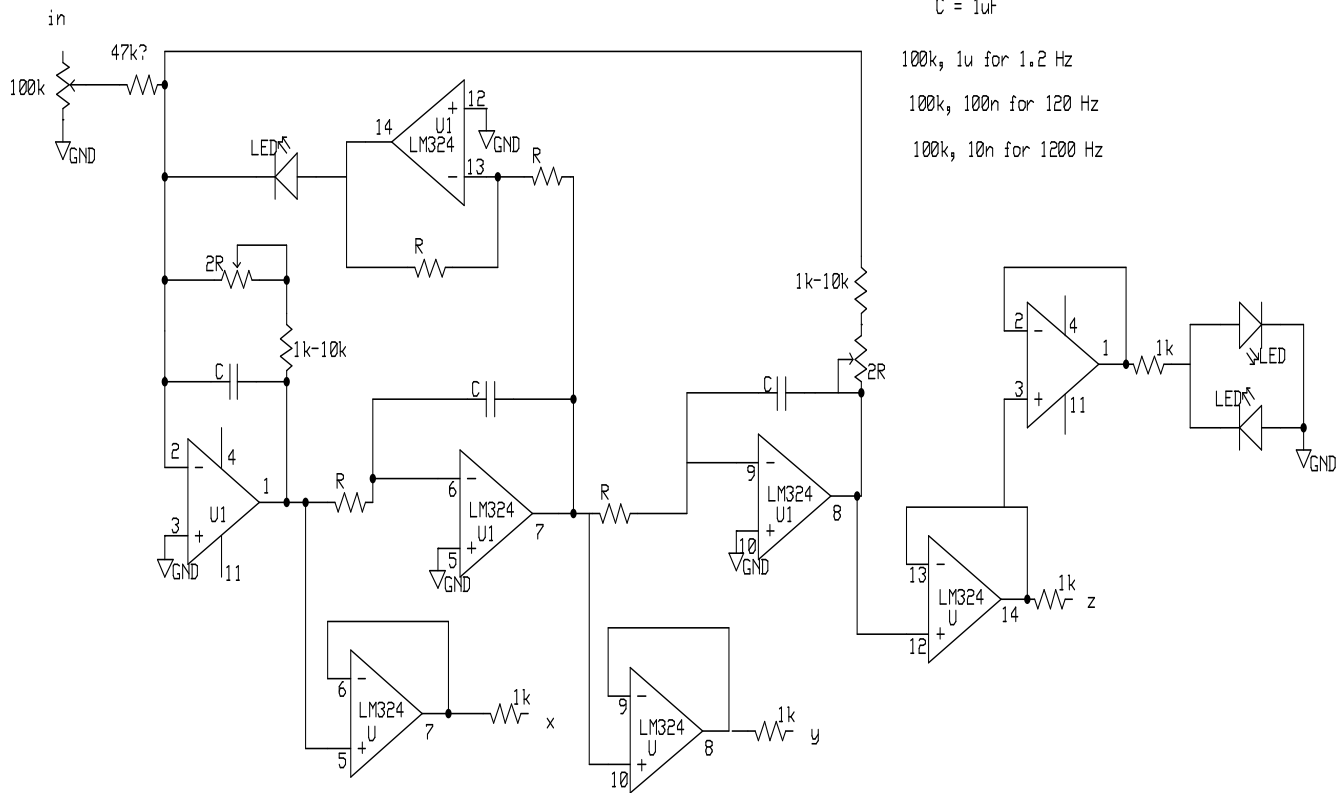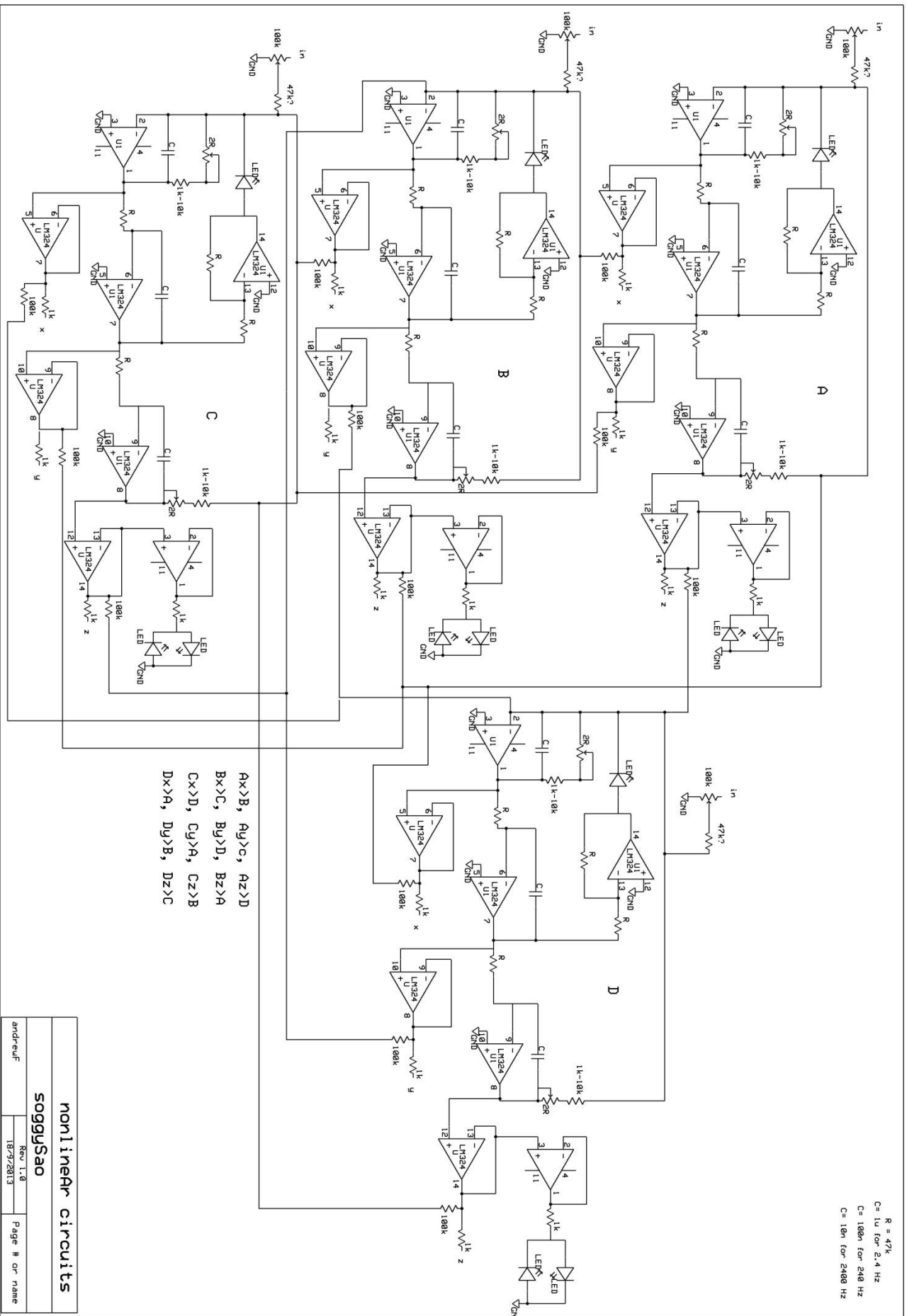2. cjy is connect to PCB B
3. cjz is connect to PCB C
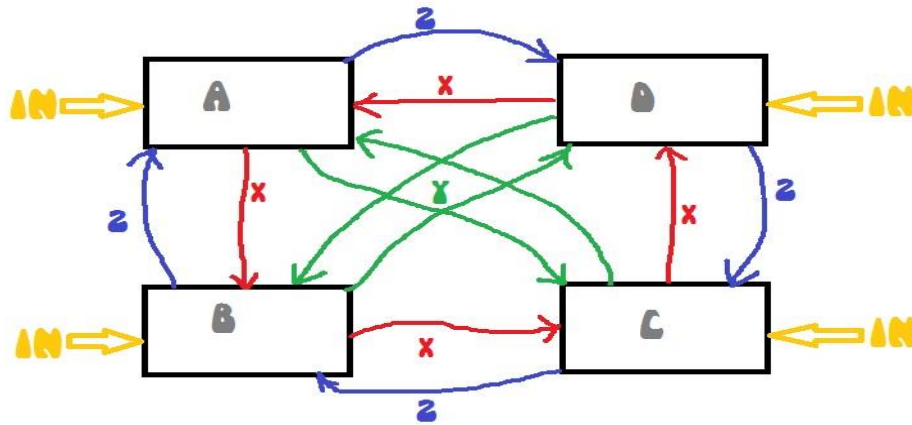
R = 47k - 51k

C = 1uF

100k, 1u for 1.2 Hz

100k, 100n for 120 Hz

100k, 10n for 1200 Hz

Ax>B, Ay>C, Az>D
Bx>C, By>D, Bz>A
Cx>D, Cy>A, Cz>B
Dx>A, Dy>B, Dz>C

R = 47k
C= 1u for 2.4 Hz
C= 100n for 240 Hz
C= 10n for 2400 Hz

A

B

C

D

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andrewF

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