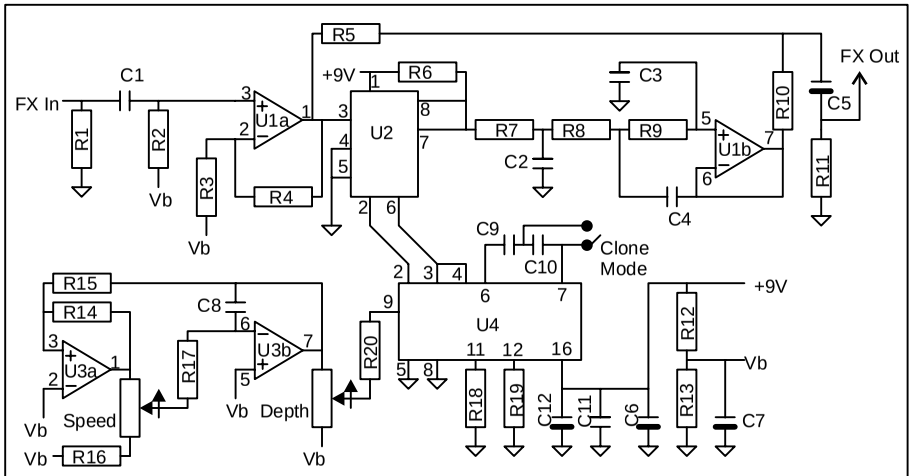
ZOMBIE CHORUS

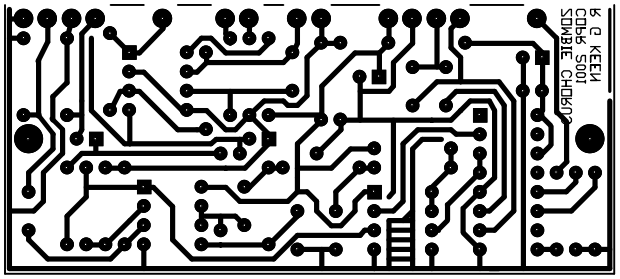
This layout implements the "Zombie Chorus" circuit designed by John Hollis. I've taken only two two minor liberties with the circuit. I added R20 between the depth pot and the CMOS input of the VCO in the CD4046 just for good luck. The input is nominally protected against static discharge, but the resistor gives it a more solid chance to survive abuse. I've also added C11 and C12 for additional power supply decoupling right at the CD4046. This may not be absolutely necessary, but I figure it's better to have space for a decoupling cap and not use it than to need one and have no place to put it.

The operation is straightforward. U1A buffers the signal and adds a bit of gain. It drives the MN3007 delay chip which delays the signal by 1024 clock cycles. The output of the 3007 is de-stairstepped by the three pole lowpass filter implemented by U1b and surrounding components. The dry signal from U1a is mixed with the delayed signal from U1b and fed to the output capacitor C5. U3 forms a simple integrator (U3b) and schmitt trigger (U3a) which cause a triangle ramp of variable speed and size to appear at the wiper of the depth pot. This low frequency oscillator (LFO) output controls the voltage controlled oscillator of U4, the CD4046. The outputs of the CD4046 (pin 2 and pin3/4) drive the delay chip directly. The phase comparator sections of the CD4046 phase locked loop chip are not used.

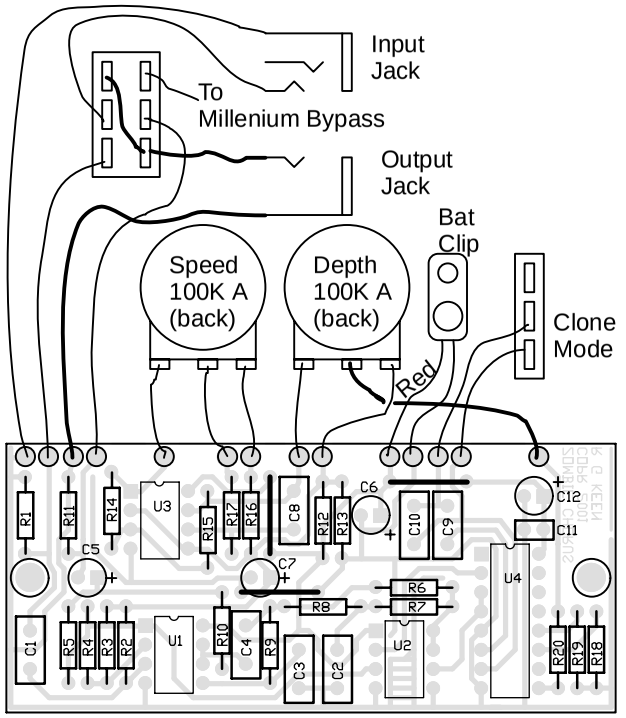
The layout below is full size, ready to print to toner transfer paper. In building the board, be certain to install the three jumpers first, as one of the jumpers sits under the edge of C7. That is bad practice, but it will work fine for this board. Normal caution about soldering is needed, but there are no very fine traces or unusually close conductors.



Pin 4 U2 and U3 connect to ground; Pin 8 of U2 and U3 connect to +9V. Arrow indicated CW pot rotation.



Updated 10/14/01! Now includes John Hollis' latest schematic update connecting U4 pin 16 to U4 pin 14. Also added more spacing in some tight areas for more printer tolerance.
Updated 10/16/01, another tight place under R11.



Designation(s)	Label-Value
C1,C2	0.001 (1nF)
C10,C9	0.001uF (1nF)
C11	0.1uF (100nF)
C12	47uF Electro
C3	220pF
C4	0.0022 (2N2)
C5	1uF
C6,C7	100uF to 470uF Electro
C8	0.01uF (10nF)
R1,R2	10M
R10,R12,R20,R5	10K
R11,R14,R19,R3	100K
R13	15K
R15,R4,R6,R7,R8,R9	47K
R16	4K7
R17	4.7M (4M7)
R18	68K
U1,U3	Dual Opamp
U2	MN3007
U4	CD4046
Speed,Rate	100K log pot

Box Stuff - jacks, switches, battery clip, Millenium Bypass circuit, LED, etc, etc.