

# Fatman Mods

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April 2003

Updated March 2014

Updated March 2023

Many of the ideas for these mods were taken from other sources on the web. I wanted to make a complete list of all the changes that I implemented to my Fatman.

## Required for correct operation:

1. Correct ADSR: Add 4700 ohm pull-up resistor from output O13 to +5 volts. This corrects ADSR operation by fully turning on ~~Q11~~ Q10.

## Improve performance:

2. Improve ADSR performance: Change R99 from 470K to 320K.
3. Improve VCO Soft Sync: Replace R38 and R39 with LED (figure 2)
4. Lower Frequency Range: Replace R73 with jumper.
5. Improved Glide: Replace IC10 and IC13 with LM347 (lower input bias current prevents detuning when operating the glide control). Re-adjust R42 (figure 1).

## New functionality:

6. Independent VCO Pitch Controls: Remove R33. Change R36 to 56K. Change R40 to 10K potentiometer and wire in parallel with R34 (figure 1).
7. Independent VCO Volume Controls: Remove R46 and R55. Replace R57 with jumper. Wire R56 in place of R46. Add 10K volume control and wire in place of R55. Wire the wiper of each potentiometer through 100K resistor to point G (figures 1 & 4).
8. Sub-Octave / Square Wave Outputs: Wire clock of each flip-flop (4027B) to pin 3 of each VCO. Wire each Q-1 output through 10 uF (negative to Q-1 output) and 30K resistor to one side of 100K volume potentiometer. Wire other side of potentiometer to ground. Wire the wiper of each potentiometer through 100K resistor to point G. Wire J and K inputs of each flip-flop to pin 16. Wire SET and RST inputs of each flip-flop to pin 8. Wire pin 16 to GND and pin 8 to -12 volts. Bypass pin 8 and 16 with 0.1 uF capacitor (figure 4).
9. Ring Modulator: Wire Q-0 output of each flip-flop to inputs of XOR gate (4030B). Wire output through 10 uF (negative to Q-0 output) and 30K resistor to one side of 100K volume potentiometer. Wire other side of potentiometer to ground. Wire the wiper of the potentiometer through 100K resistor to point G. Wire unused inputs to pin 7 (or 14). Wire pin 14 to GND and pin 7 to -12 volts. Bypass pin 7 and 14 with 0.1 uF capacitor (figure 4).
10. HP Filter: Disconnect positive side of C23 from pin 9. Connect positive side of C23 to center of SPDT switch. Wire one side to pin 9. Wire other side to pin 8 (figure 3).
11. VCO1 Hard Sync: Disconnect pin 4 of VCO1 from ground. Wire pin 4 of VCO1 to center of SPDT switch. Wire one side to GND. Wire other side to pin 3 of VCO2 (figure 2).

12. Guitar Tuner Output: Wire new output connector on rear. Add DPDT center off switch to select VCO1 or VCO2 to tuner jack attenuated through 20K and 1K resistor network for guitar tuner (figure 5). Use a stereo patch cable and the tuner will turn off in the center off position.
13. LFO Modulator: Add triangle LFO for modulating filter. Add SPDT switch to select either A(S)R or LFO output (figure 6). 0.7 to 4.5V output voltage range selected for modulation.

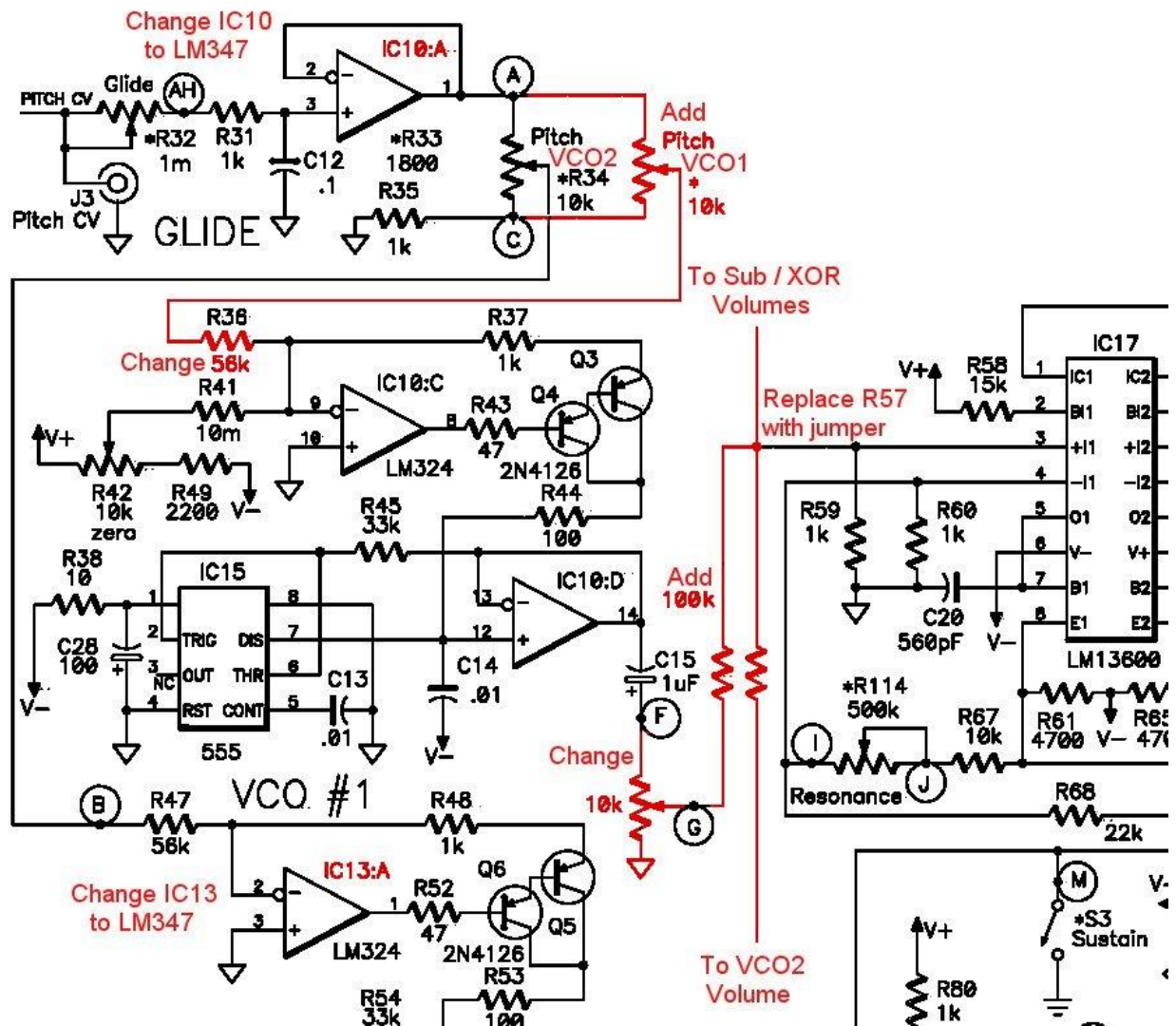


Figure 1.  
Pitch, Glide, and Volume

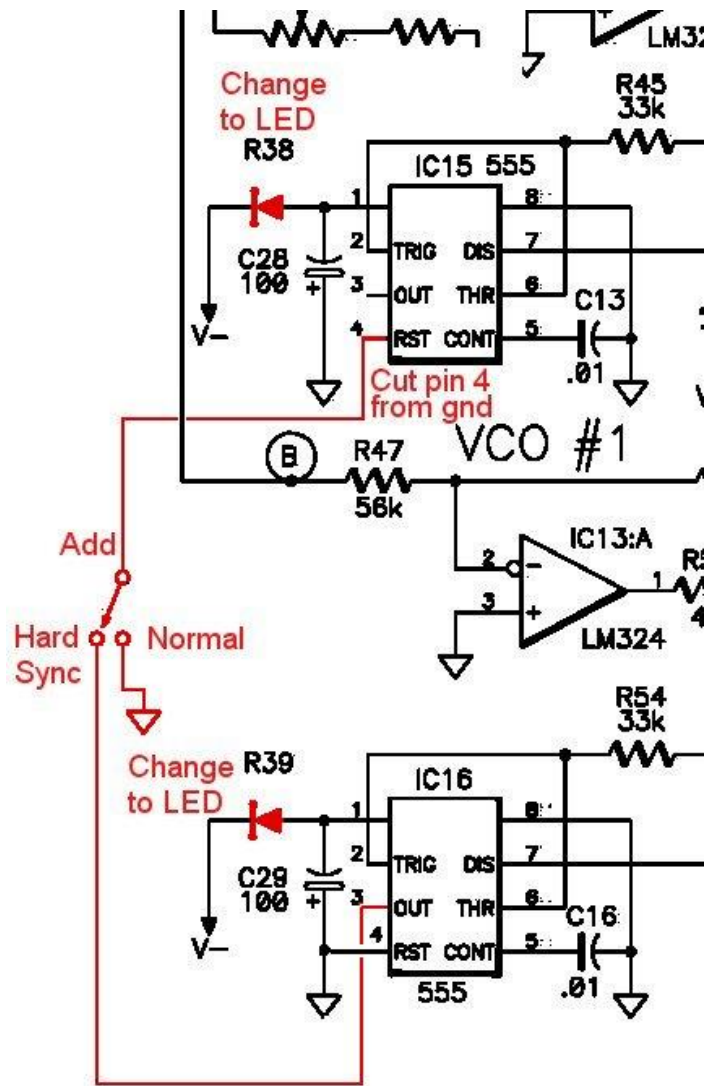


Figure 2.  
VCO Soft and Hard Sync

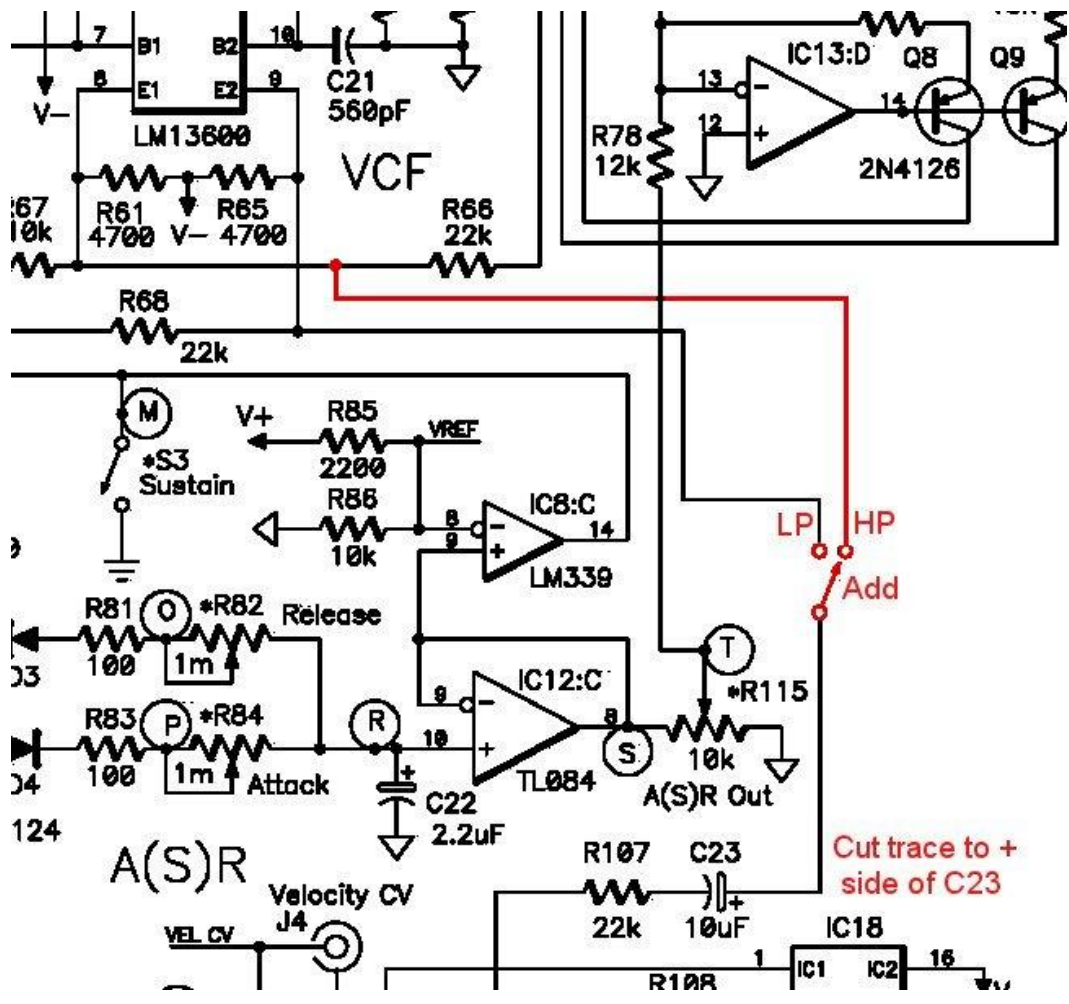


Figure 3.  
Filter

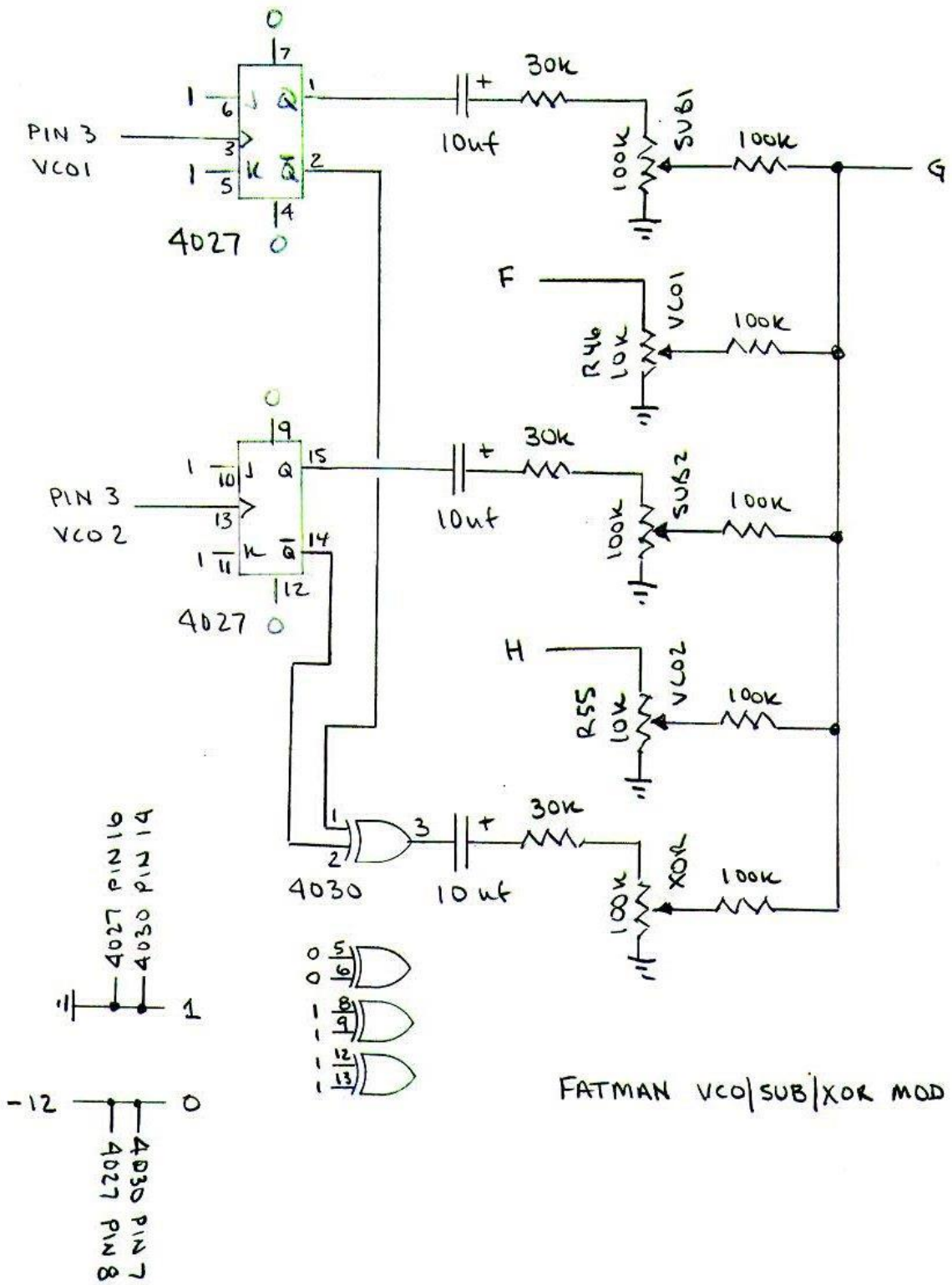


Figure 4  
Sub-Octave and XOR

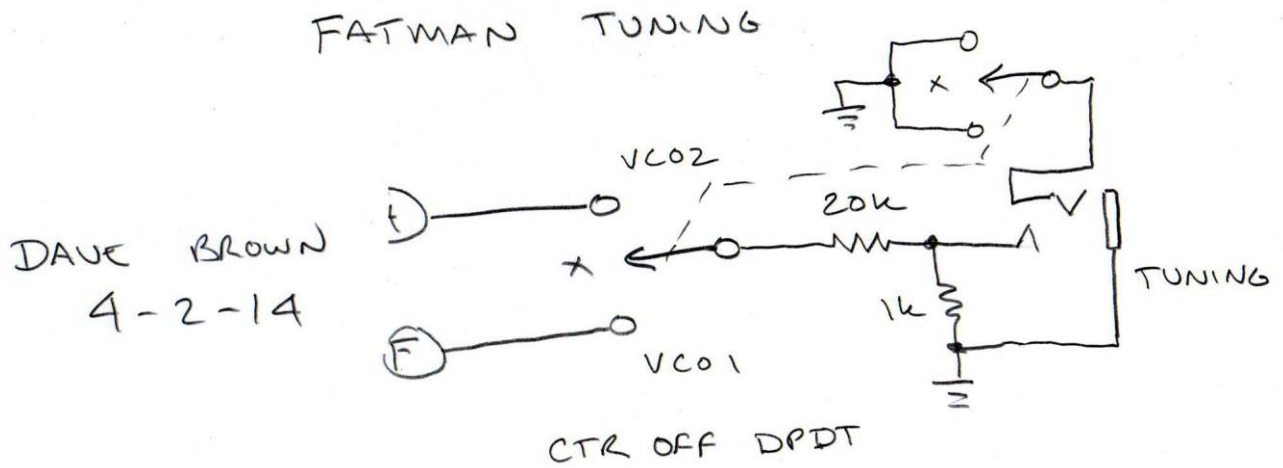


Figure 5  
Guitar Tuner Output

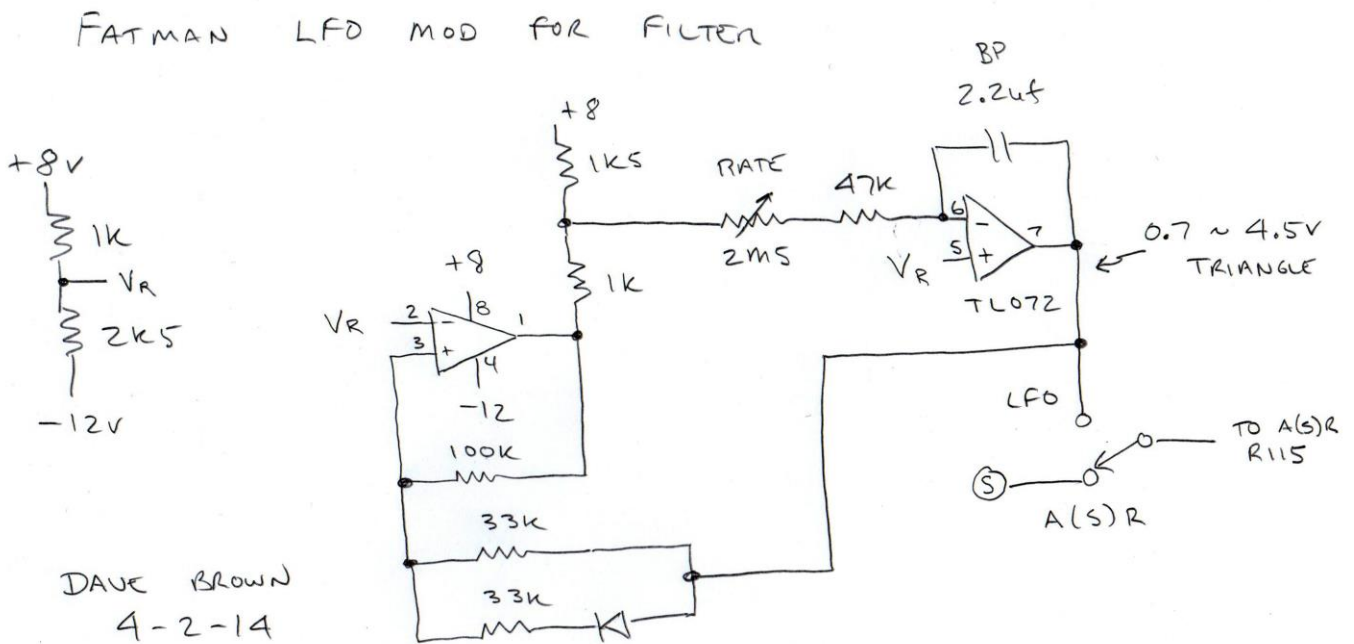


Figure 6  
LFO Modulator