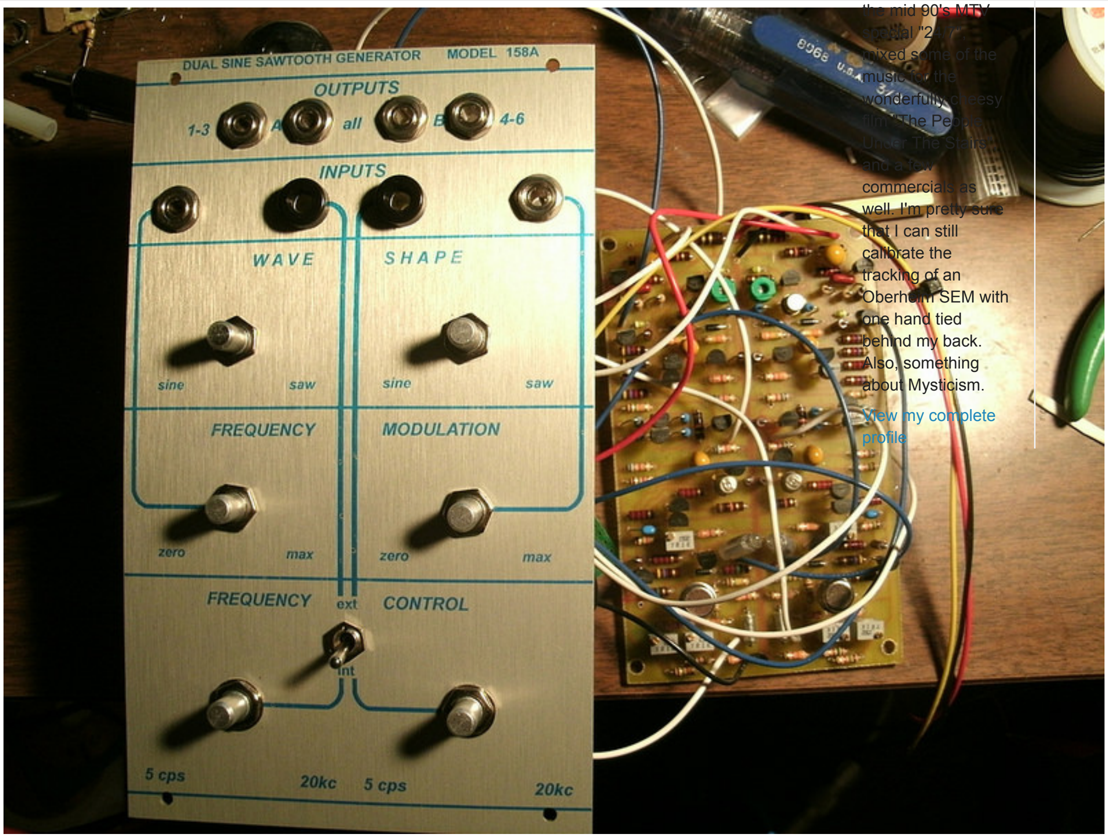
ebolatone

Thursday, December 13, 2012

Buchla 158A PCB / Build



SOUNDBITES:

Octave saws into the 410 LPF filter:

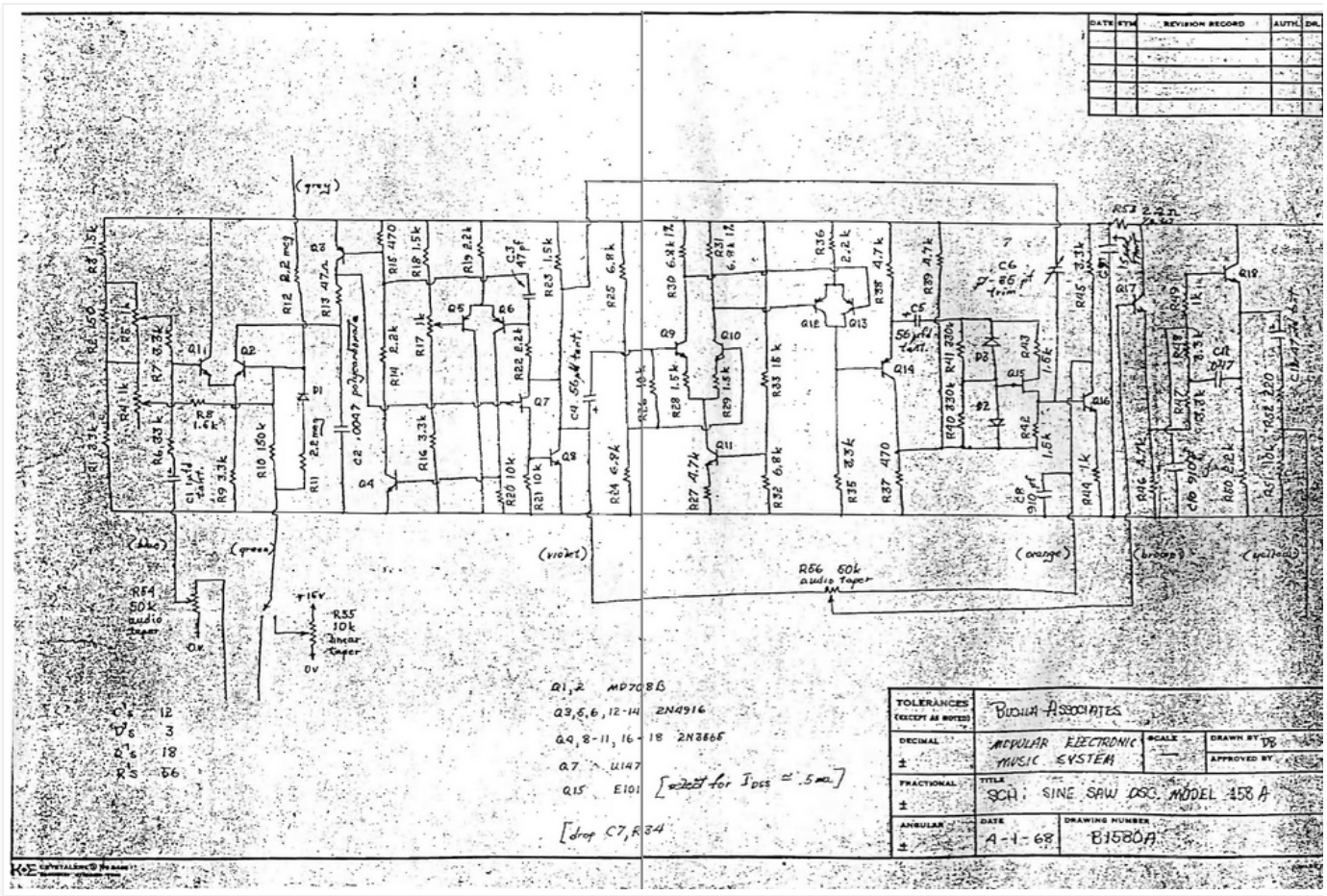
https://soundcloud.com/peake-1/410-lpf-158a-saws

Full-blown audio-rate FM:

https://soundcloud.com/peake-1/158a-try-1wav

Please note that the 100 series oscillators do not offer simultaneous use of the front panel Frequency control and the CV input jack; a switch selects between them. The 156 module was used as a CV input front end and in the 200 series oscillators, those controls were bundled into the oscillator module.

Please also note that these oscillators are scaled way off from 1V/Octave so don't even expect anything like that.



Link to schematic:

http://www.flickr.com/photos/11165691@N03/8270607662/lightbox/

Between the Great Lakes Audio layout doc and photos of a vintage module, I was told there is an extra transistor in the sine shaper not present in the schematic and easily confirmed as much. There is also a 6K8 resistor to ground.

PARTS

An E101 FET (Q15) is listed for the sine shaper section, selected for an Idss of 0.5. This part is unobtainium; use a 2N4339 as a substitute.

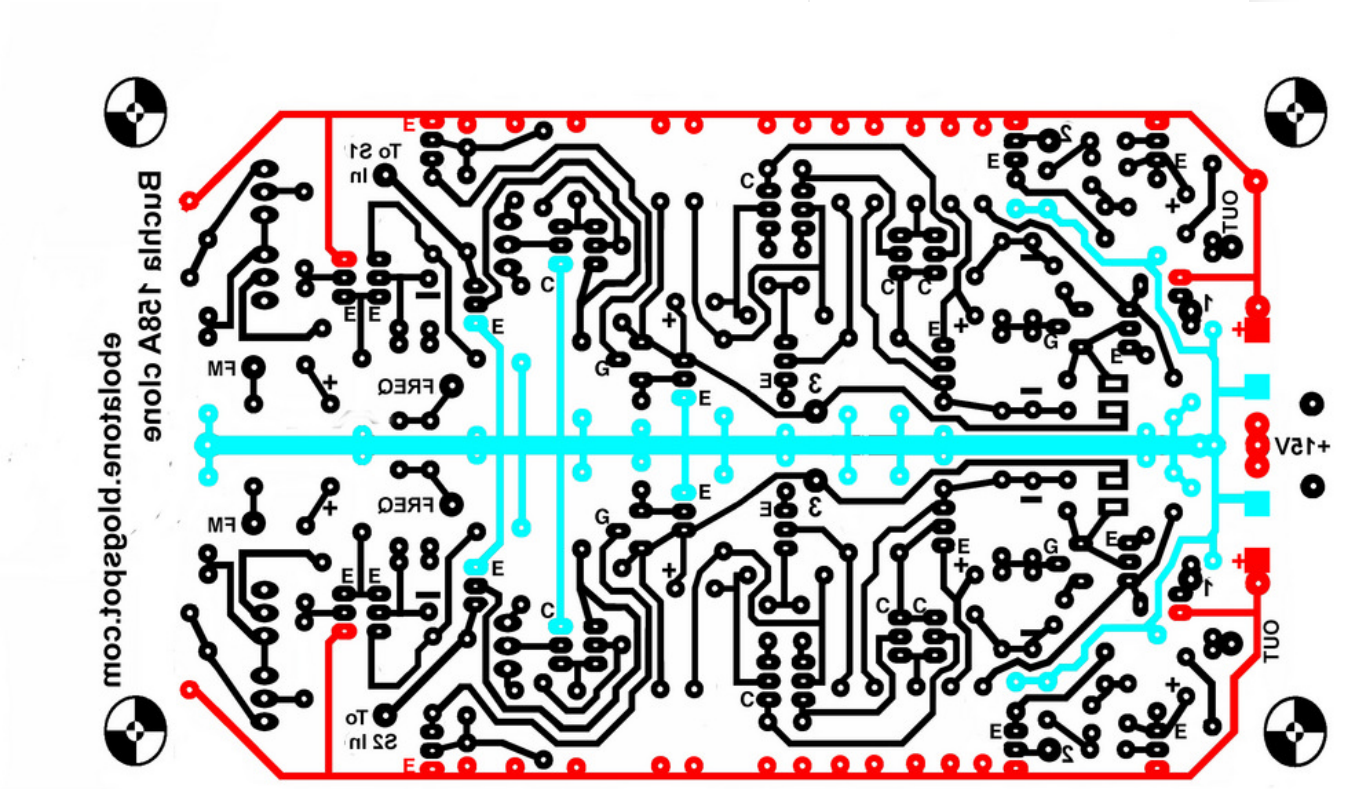
The other unobtainium is the U147 transistor. Dr. Stinchcombe recommended trying the commonly-available J175 and J176. The 176 and 175 both cover the same frequency range as the U147 but have an odd side-effect: the 175 has a buzzier sine wave. The much more expensive 2N5020 covers the same sweep range and has a smoother sine.

The first matched pair of resistors on the PCB artwork shown, going left to right, can also be an IT122 dual tranny. The original part, the MD708B, is unobtainable and its specs are really not very good anyway.

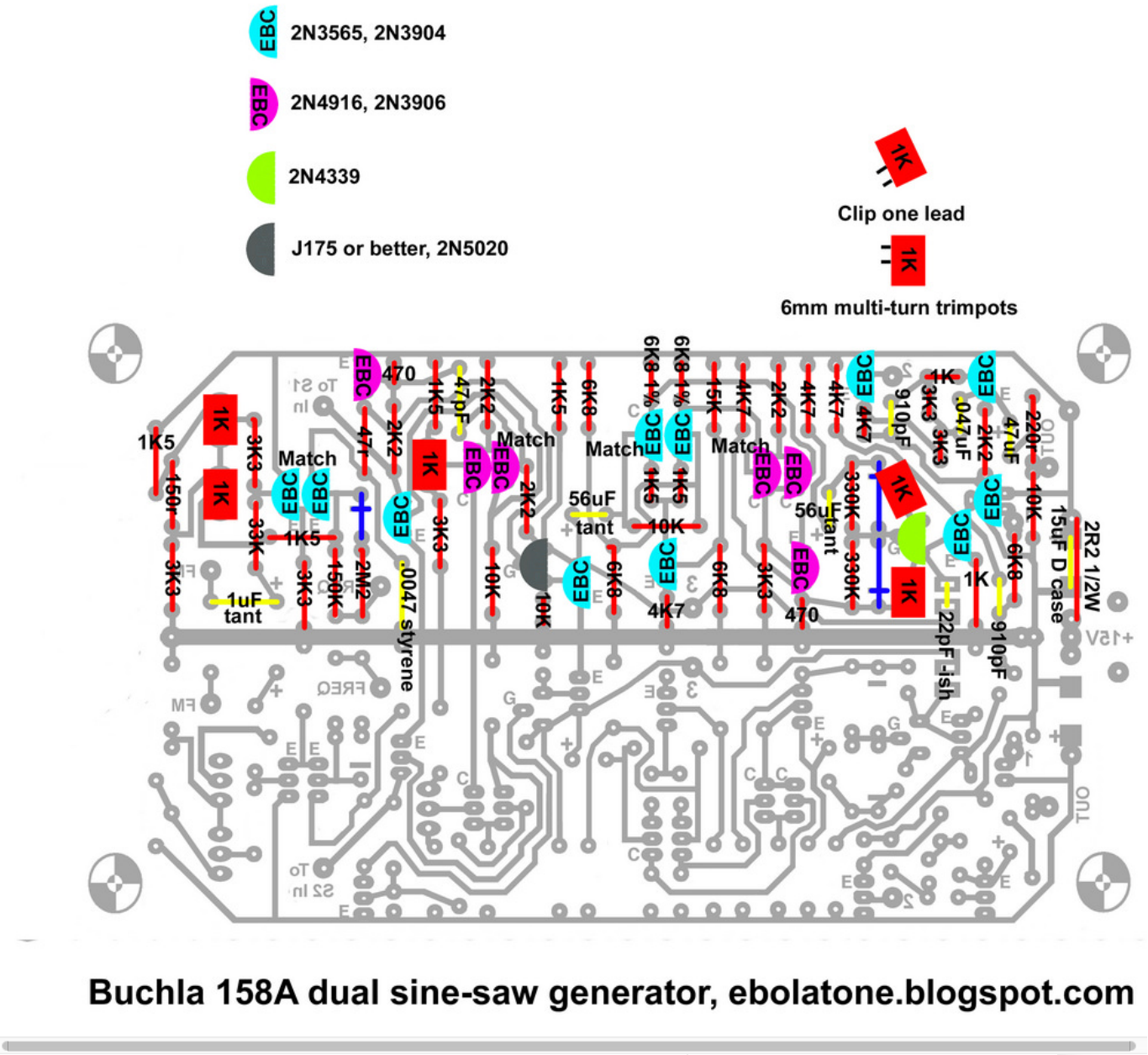
Etch artwork

Download HERE.

Power Continuity:



PARTS LEGEND



Buchla 158A dual sine-saw generator, ebolatone.blogspot.com

Click upon this for a close-up or download original

WIRING

Coming soon

Please note that the "To S1 In" trace and pad are a mistake, missed removing them prior to posting. They connected to a squaring circuit from the 144 but it caused modulation in the pitch so I removed it.

PITCH SCALING

Use the tuning instructions on the 144 build page.

SINE PURITY

The use of multi-turn trimpots allows you to not be so militant regarding the Idss characteristic of the 2N4339. Clip one leg on each 6mm 1K trimpot for the sine shaping circuit (in place of the 1K5 resistors seen following it in the schematic).

You'll have to turn one trimpot through its entire throw and back to find the best spot, then do the other, then adjust the first again and you can get a good sine wave.

Module variations

I am seeing a few different versions on the web. One CBS version has no CV control of Waveform. The Magnus CBS schemo shows a kludge with a CV input tagged on sans summing. This would of course be a piece of cake to add at the front panel.

http://www.flickr.com/photos/45430902@N07/7125296491/

http://www.modulargrid.net/u/buchla-158

http://www.modulargrid.net/u/buchla-158-

Variations of the CBS have individual switches for Internal/External CV control.

CBS Schematic:

http://rubidium.dyndns.org/~magnus/synths/companies/buchla/Buchla_1580_1_200.jpg

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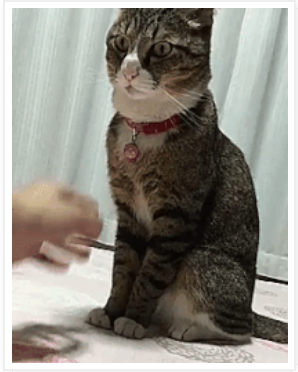
Thoughts on the CBS version

It uses the 24V rail found on the original 100 and 200 systems and several opamps, at least one of which is in the audio path. It also uses the uA726. It might be interesting to kludge the CBS 158 CV section with the 726 onto the front end of the 158A, keeping the rest of the A intact.



Posted by Peake at 3:53 PM

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