

Use star-grounding for best results.
Recommended ground connections:

- 1) C3, L1, C4, R1, R2, R4
- 2) L2, C15, R8, R9, R11
- 3) R11, R13, C13, C14
- 4) C2
- 5) C6
- 6) C8
- 5) C14 is grounded through the case

PitchAntenna

PitchToVCA

Don't omit C7. It's a failsafe intended to block high DC voltage from the antenna.

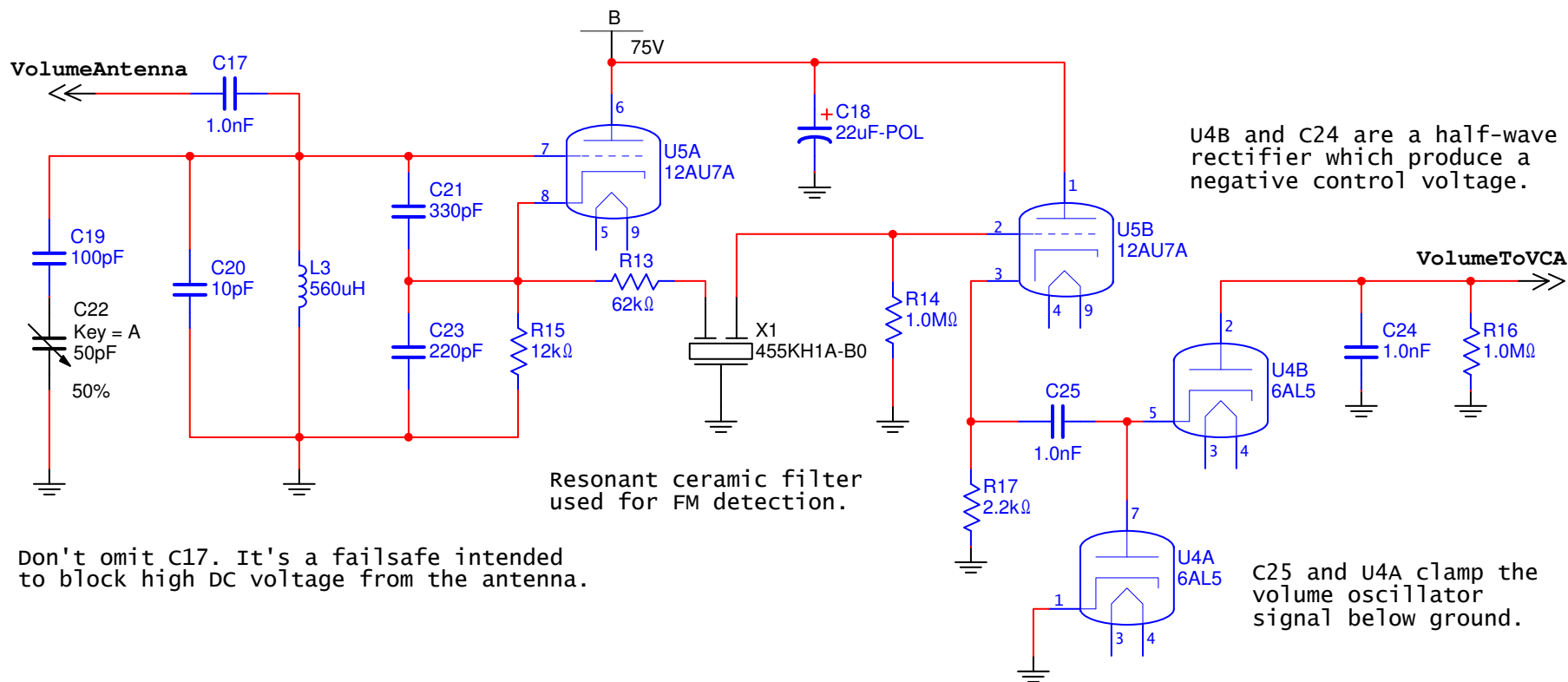
Changing R1 and R8 to ~82k will decrease the output signal amplitude and harmonic content somewhat.

ALL frequency-determining capacitors should be 5% tolerance or better mica or ceramic rated for 100 v or higher.

To change the sound somewhat, try using a 12AU7 or 12AT7 for the mixer instead of the 12AX7.

Team Therenin Georgia Institute of Technology School of ECE ECE 4007 L03 SP08			Ryan Adams, Matt Britt, William Findley Jr., James Lewis, Yuri Yelizarov		
Title: Pitch circuit		Date: 2008-04-29		Revision: 5.5	
Desc.: Includes pitch reference oscillator, pitch variable oscillator, mixer, and LPF.					
Designed by: Matt Britt		Sheet 1 of 4			

The volume oscillator isn't as sinusoidal as the pitch oscillators, but the trade-off is necessary to increase the amplitude.



U4B and C24 are a half-wave rectifier which produce a negative control voltage.

Resonant ceramic filter used for FM detection.

Don't omit C17. It's a failsafe intended to block high DC voltage from the antenna.

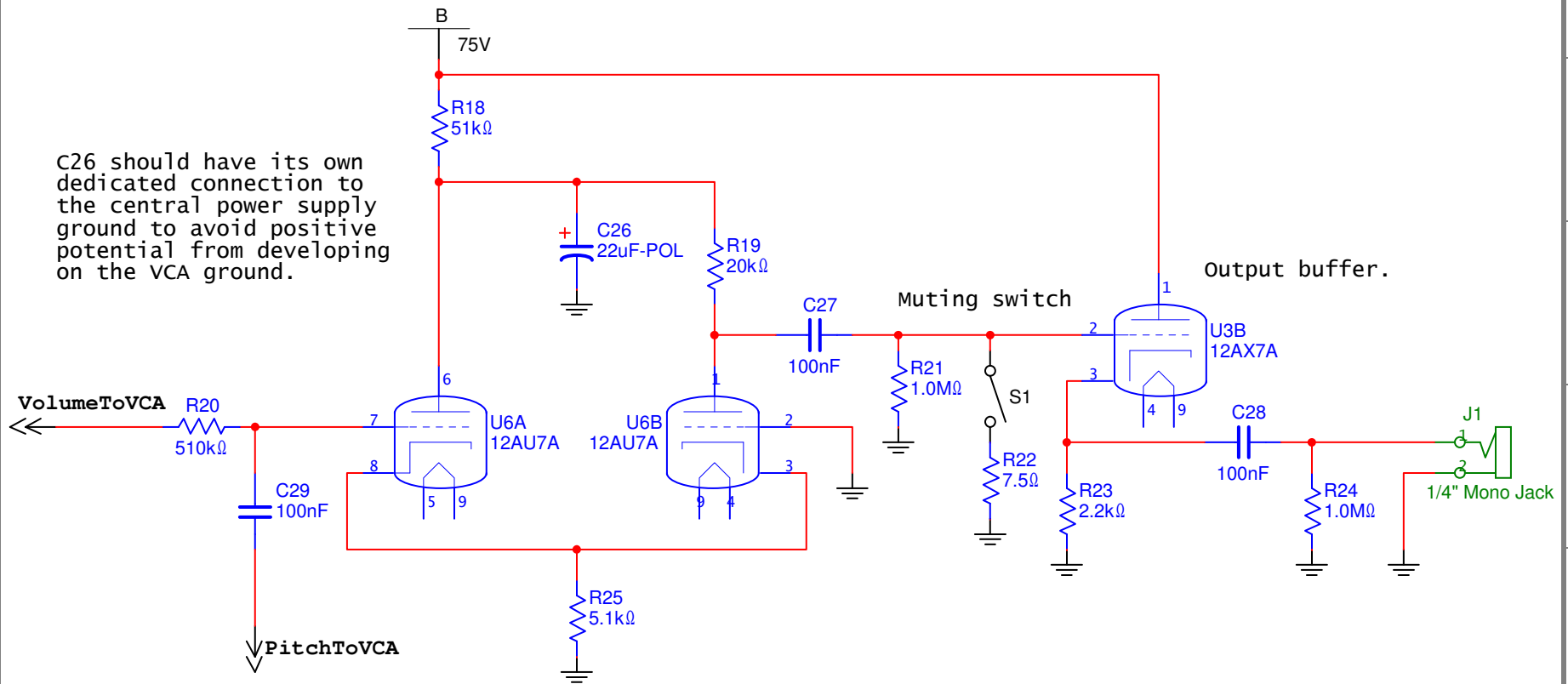
C25 and U4A clamp the volume oscillator signal below ground.

Use star-grounding for best results. Recommended ground connections:

- 1) C20, L3, C23, R15, X1, R14, R17
- 2) U4A.1, C24, R16
- 3) C18
- 4) C22 is grounded through the case

ALL frequency-determining capacitors should be 5% tolerance or better mica or ceramic rated for 100 V or higher.

Team Theremin Georgia Institute of Technology School of ECE ECE 4007 L03 SP08			Ryan Adams, Matt Britt, William Findley Jr., James Lewis, Yuri Yelizarov		
Title: Volume circuit	Date: 2008-04-29	Revision: 3.2			
Desc.: Volume oscillator, ceramic filter, diode clamp, and half-wave rectifier.					
Designed by: Matt Britt		Sheet 2 of 4			



C26 should have its own dedicated connection to the central power supply ground to avoid positive potential from developing on the VCA ground.

Output buffer.

All capacitors should be rated for 100 v or higher.

The negative DC bias produced by the volume circuitry modulates how much of the pitch signal at the grid of U6A appears at its cathode and is amplified by U6B.

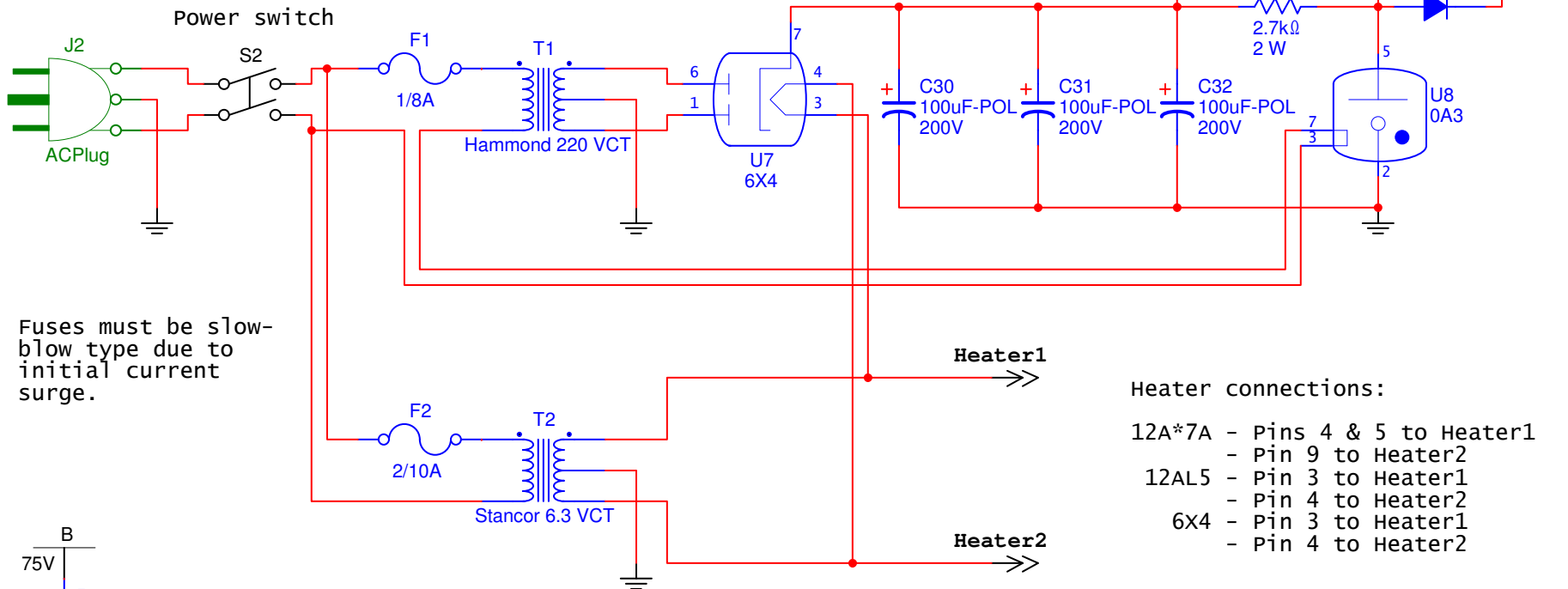
Team Theremin Georgia Institute of Technology School of ECE ECE 4007 L03 SP08		Ryan Adams, Matt Britt, William Findley Jr., James Lewis, Yuri Yelizarov	
Title: Voltage-controlled amplifier	Date: 2008-04-29	Revision: 1.2	
Desc.: VCA and output buffer amplifier.			
Designed by: Matt Britt	Sheet 3 of 4		



WARNING! Use ONLY a properly-grounded AC plug. Failure to do so could result in hazardous voltages present on the case in the event of a fault condition. Observe all grounding points in the power supply schematic. Use star grounding and a central case ground to avoid ground loops and unwanted RF propagation.

D1 prevents a relaxation oscillator from forming between the 0A3 and the large RF decoupling capacitors downstream.

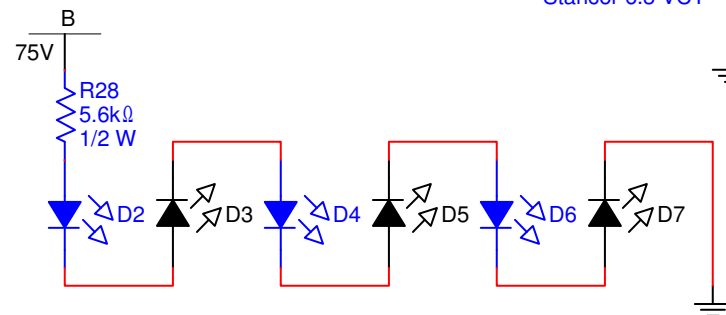
Adjust R26/R27 if the 0A3 has difficulty striking.



Fuses must be slow-blow type due to initial current surge.

Heater connections:

- 12A*7A - Pins 4 & 5 to Heater1
- Pin 9 to Heater2
- 12AL5 - Pin 3 to Heater1
- Pin 4 to Heater2
- 6X4 - Pin 3 to Heater1
- Pin 4 to Heater2



Ready indicators to be mounted under U1-U6.

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 ECE 4007 L03 SP08

**Ryan Adams, Matt Britt, William Findley Jr.,
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Title: Power supply	Date: 2008-04-29	Revision: 1.8
Desc.: Filament and regulated plate voltage power supply.		
Designed by: Matt Britt	Sheet 4 of 4	