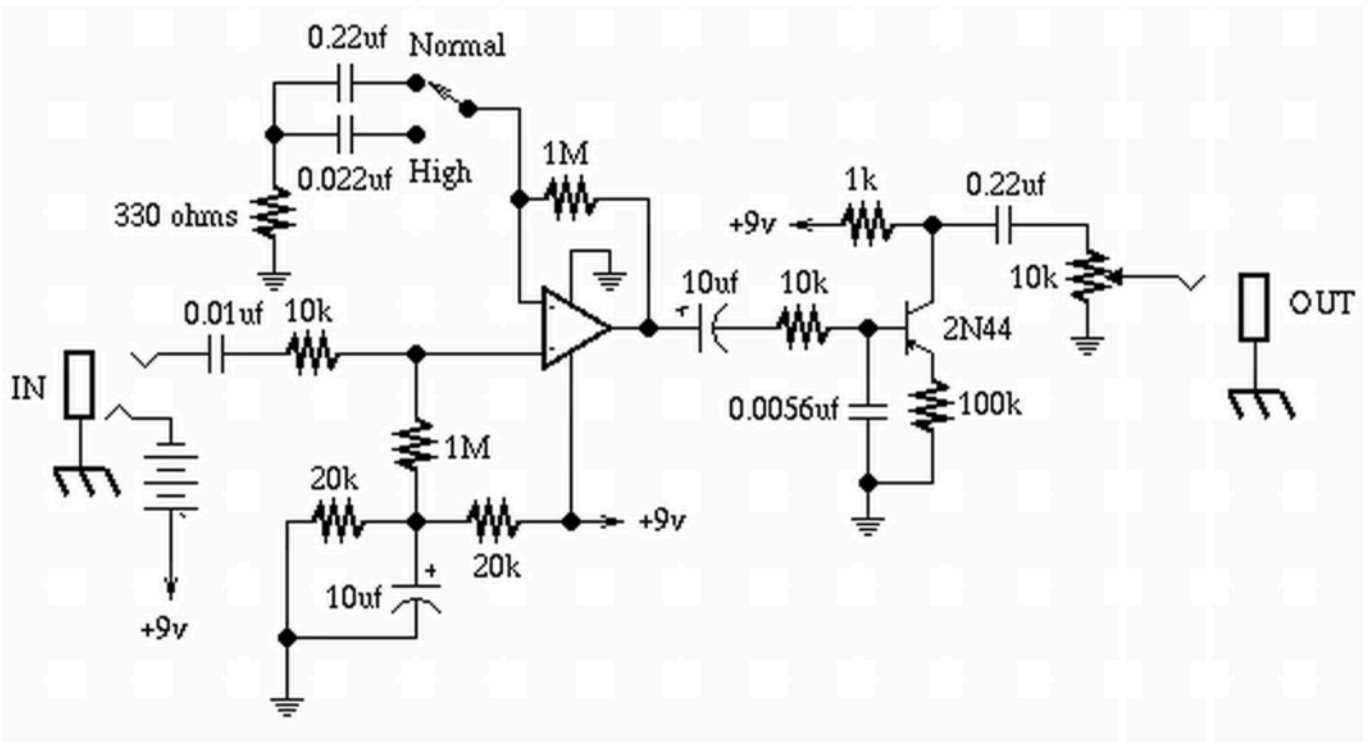


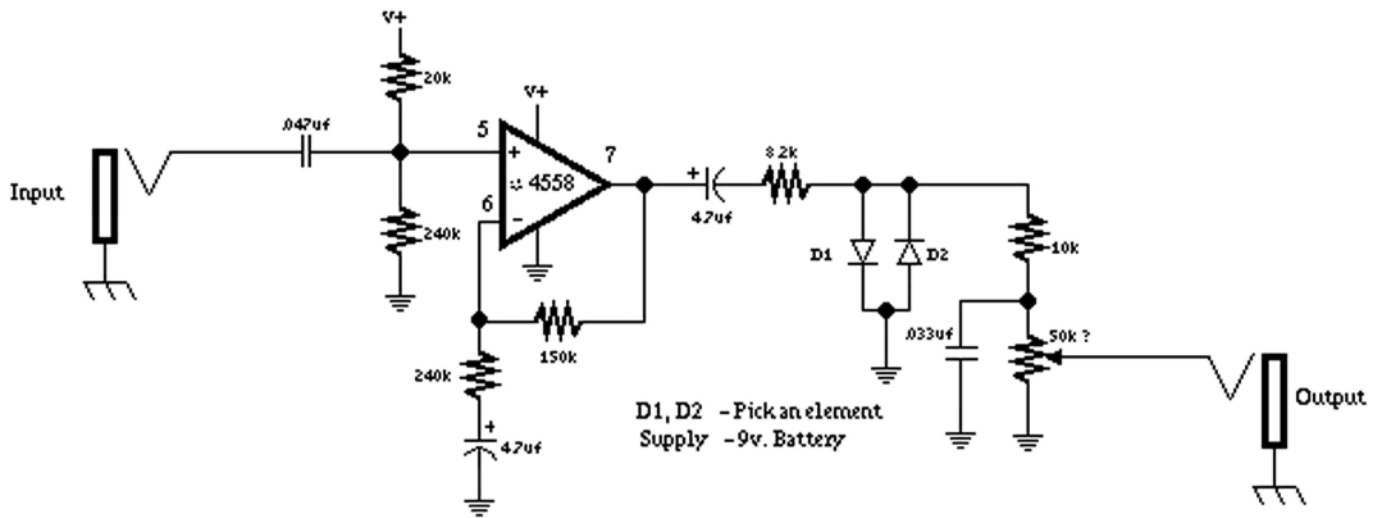
Angry Beard III



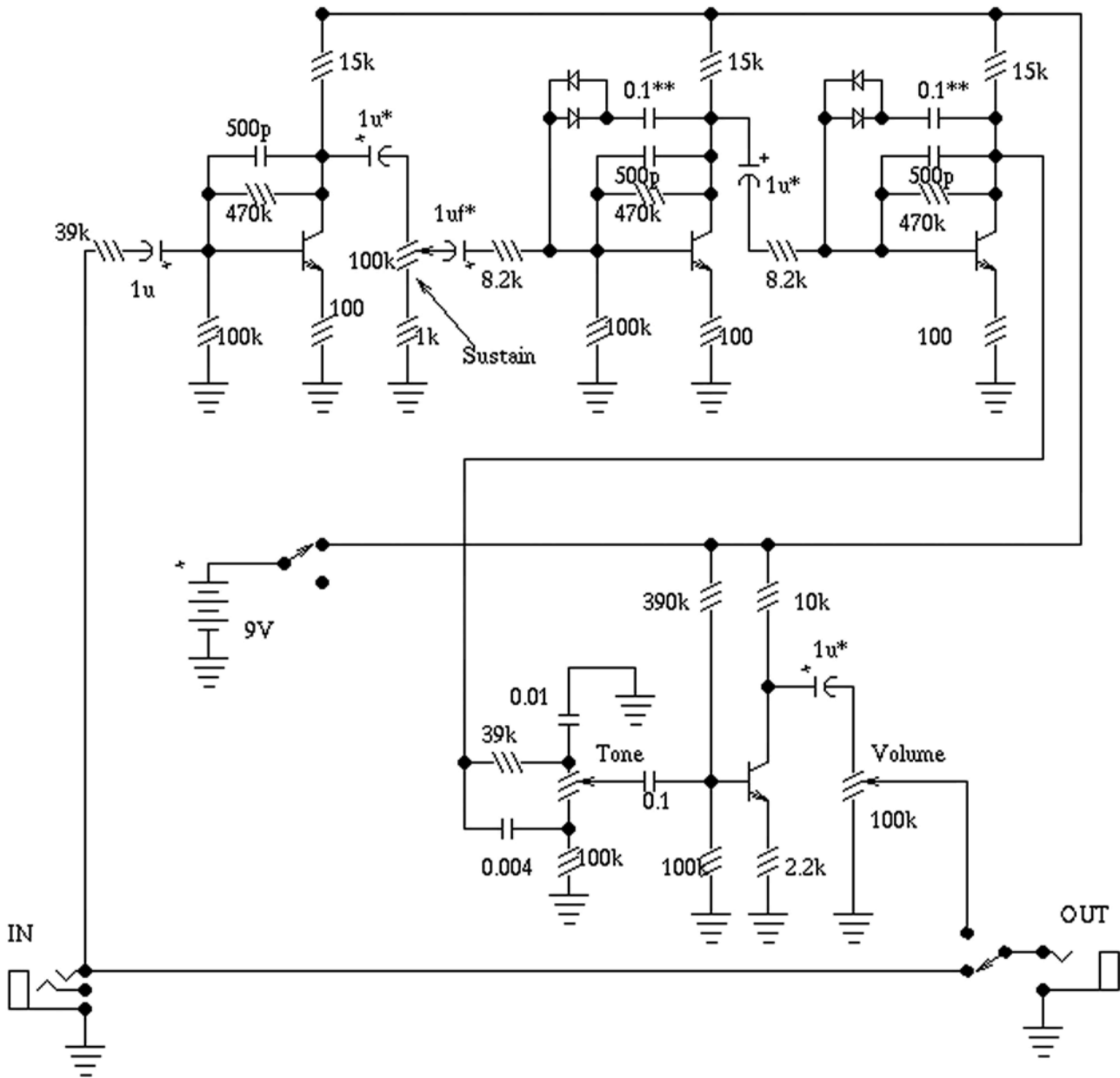
The op-amp can be any lownoise single op-amp, the original used a NE5534. The 2N44 could probably be replaced by other PNP germanium transistors with out much change in sound. The switching aspect has been left out of this schem, but you will probably want to add a bypass of some type to this effect. The emphasis switch chooses a tone flavor, this could be expanded to include a wider range of frequencies, but too small a cap value may cause oscillation. Any attempt at taming the internal gain of this effect has been left out, but could be easily added. This can be noisy depending on your rig, so a 10-15pf cap could be placed in the feedback loop of the op-amp if your concerned about too much squeaking.

-Jamie Heilman
n9343176 @c.c. wwu. edu

Blue Clipper

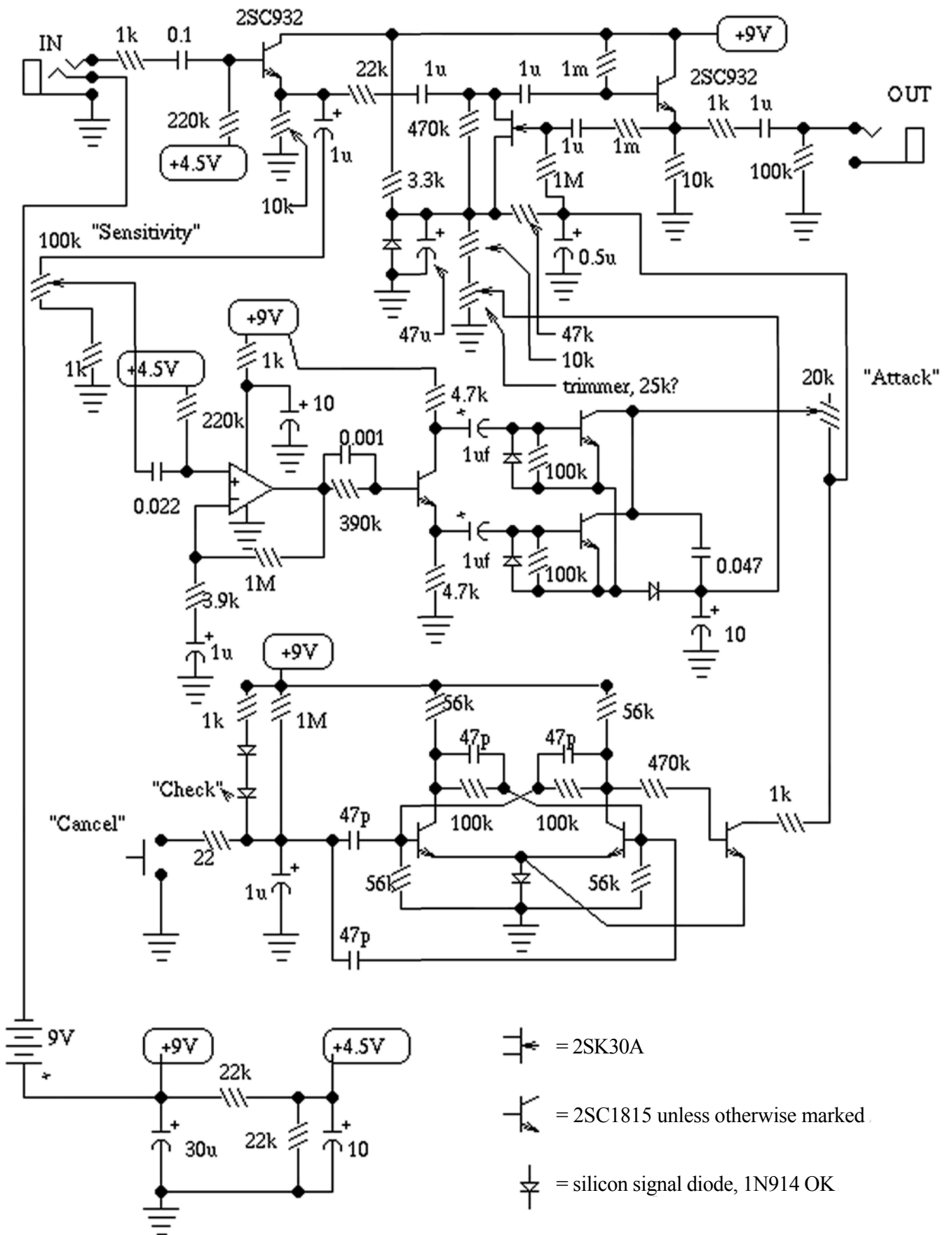


ELECTRO-HARMONIX BIG MUFF PI



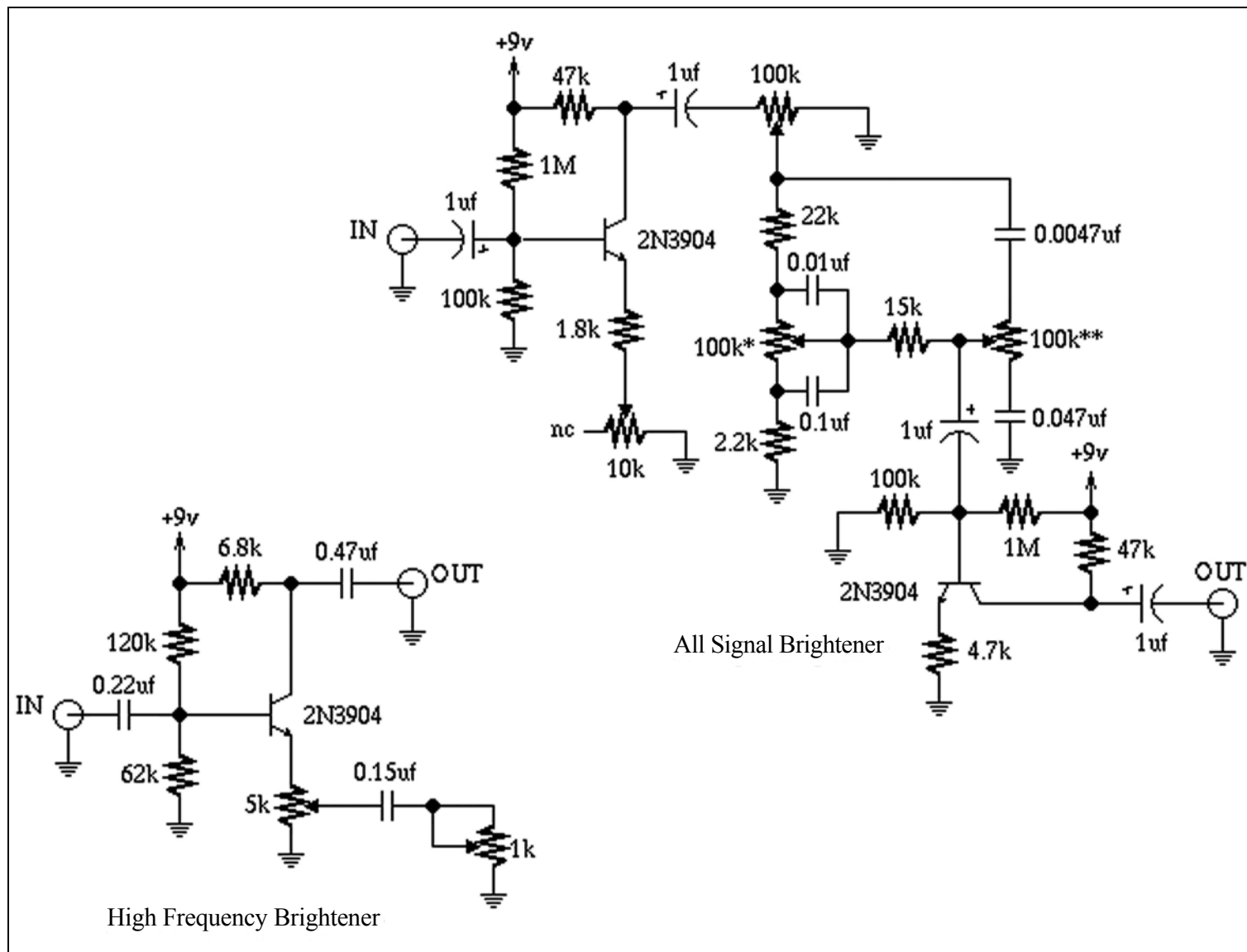
The EH Big Muff Pi would probably be improved by modem input-jack power switching and a DPDT bypass switch. This is the original schematic. The diode and transistor types are unknown. Probably any high gain NPN and IN914s work. Coupling caps marked by a * have been reported to sound better if changed to 0.1 uf as have the ** marked ones if changed to 0.01uf.

BOSS Slow Gear SG-1 Attack Delay



The SG-1 is an attack delay unit. A struck note is at first inaudible, then fades up, similar to a reversed tape recording.

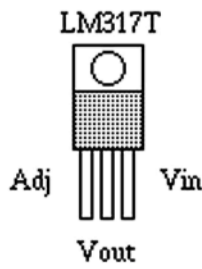
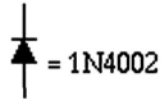
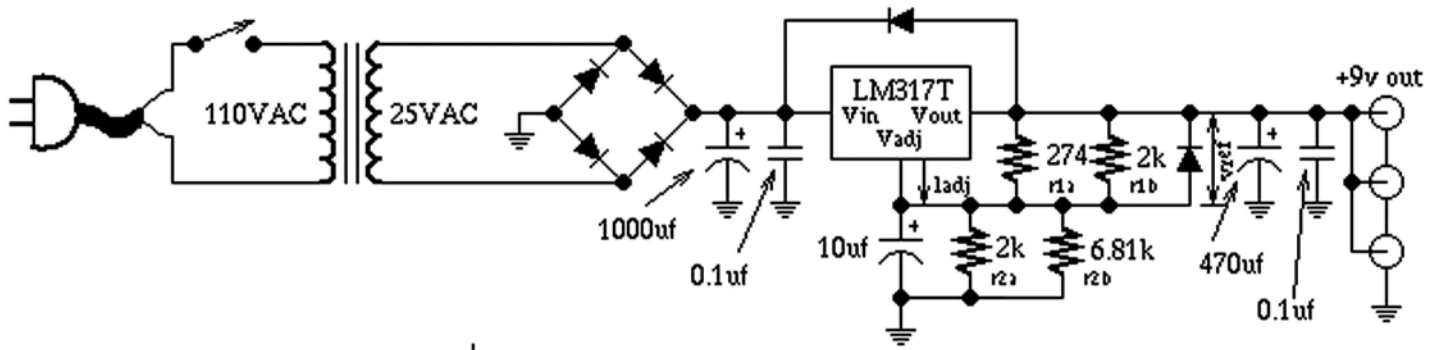
Frequency Brighteners



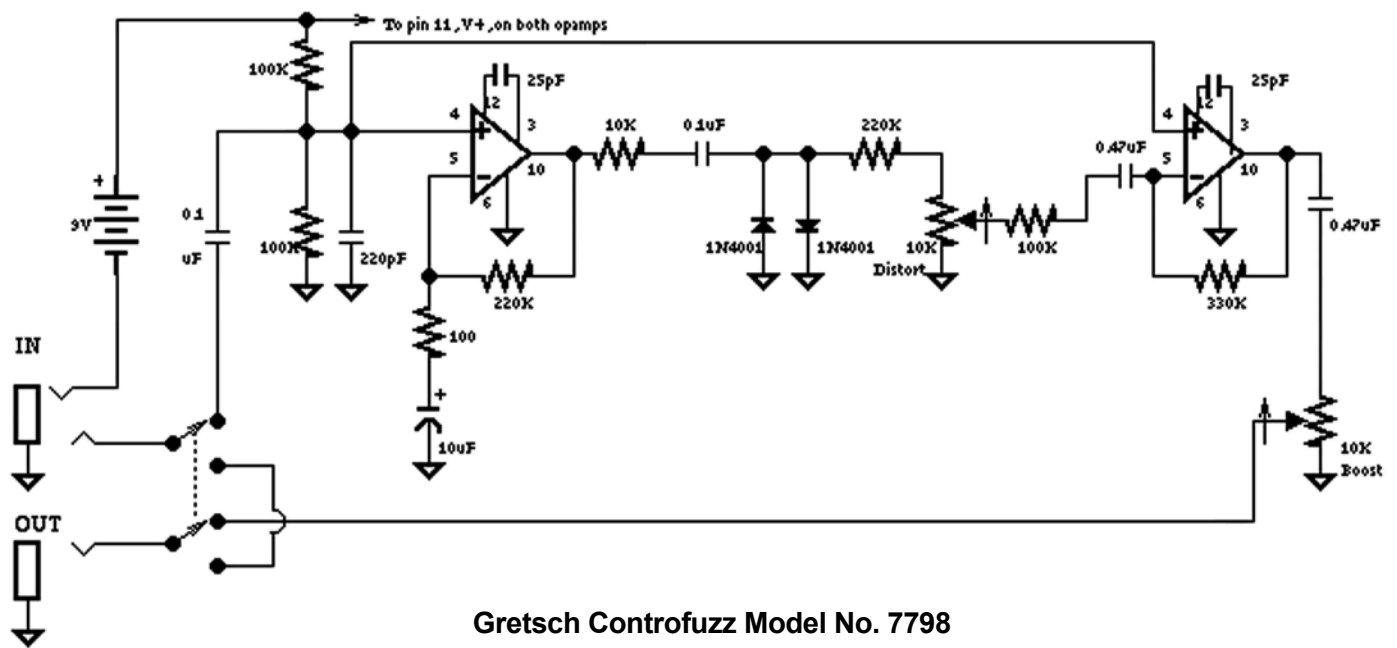
These two effect modules are not actually "guitar" effects per say, but rather synth modules that will work on any analog signal. The input and output impedances may need altering depending on your needs. The high frequency brightener is nothing more than a simple treble booster with a gain control (1k) and an intensity control (5k). The all signal brightener, however, has a separate control for brightening the low end (100k*) as well as the high end of the frequency spectrum (100k**). The 10k trimmer is a set and forget type adjustment. Set it so the circuit breaks into oscillation, then back up the setting to the point where the oscillation just stops. These two modules were excerpted from *Music Synthesizers - A Manual of Design and Construction* by Delton Horn; TAB Books, 1984.

Ultra-Clean 9V DC Power Supply

Designed by Rick Barker



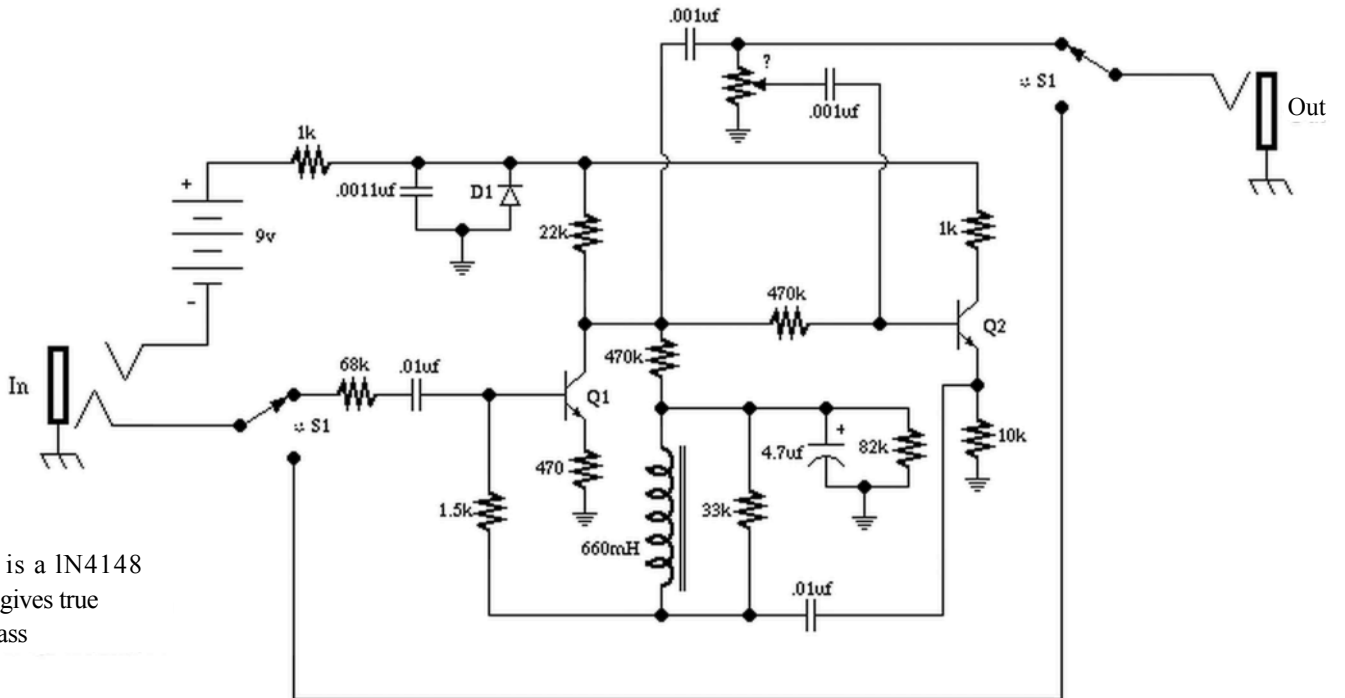
$R1 = r1a \parallel r1b = 241 \text{ ohms}$
 $R2 = r2a \parallel r2b = 1456 \text{ ohms}$
 $V_{ref} = 1.25V$
 $I_{adj} = 50\mu A$
 $V_{out} = V_{ref}(1 + R2/r1) + I_{adj} * R2 = 9.35VDC$



The GretschControfuzz is a variant of the op-amp-driving-diode-clipper type of distorter. The only unusual features are that the distortion is run at high boost all the time in the first opamp, and then subtracted from the dry signal in the second opamp. The amount of distortion mixed in is determined by the "Distort" control, and the overall volume level when the distortion is switched in is set by the "Boost" control.

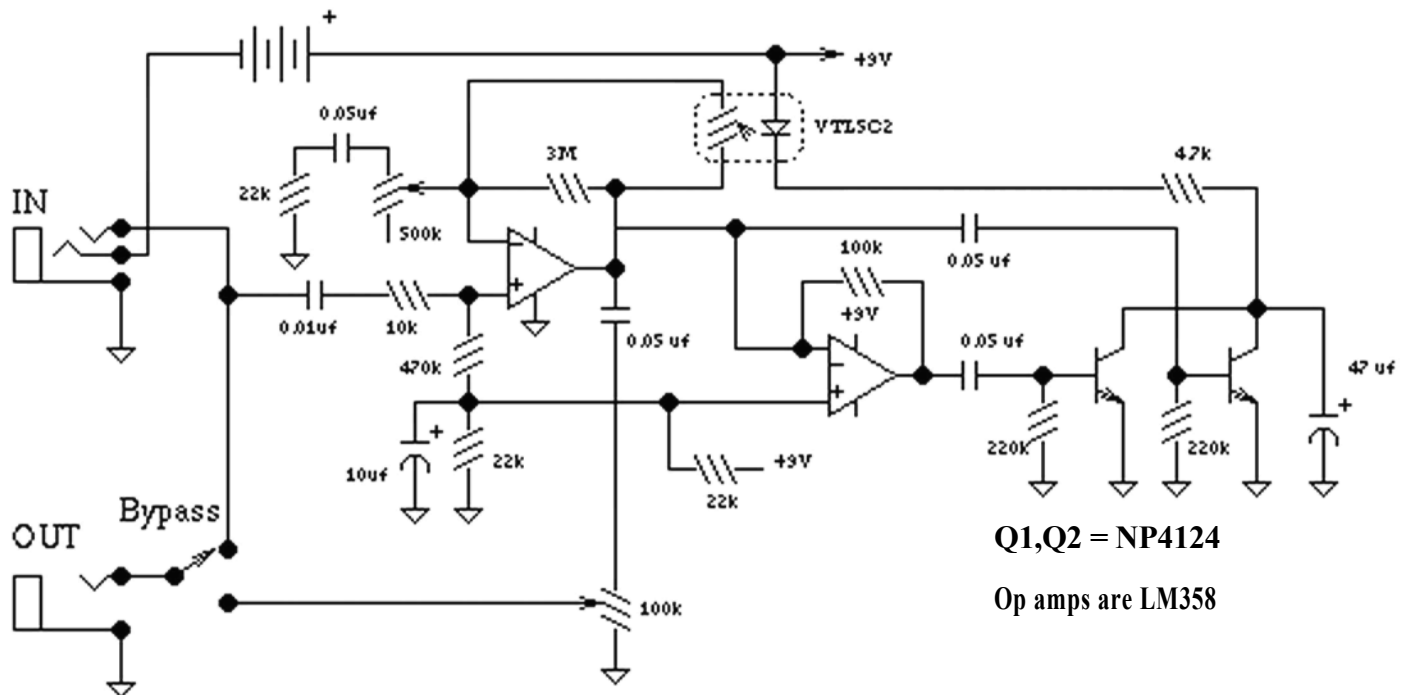
The op amps are both type 748, which needs a compensation capacitor (25 pF in this case) to be stable. Other modern opamps should work.

Dunlop Cry Baby Wah Wah

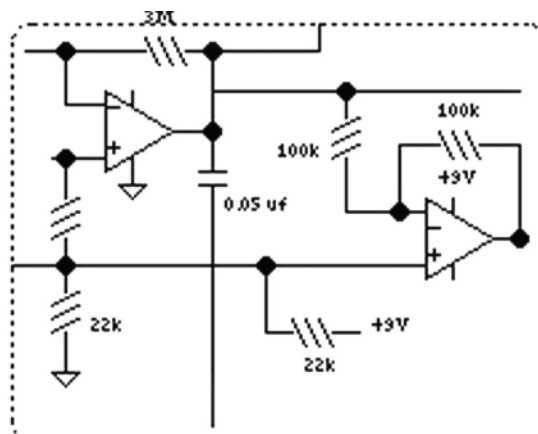


-D1 is a 1N4148
-S1 gives true
bypass

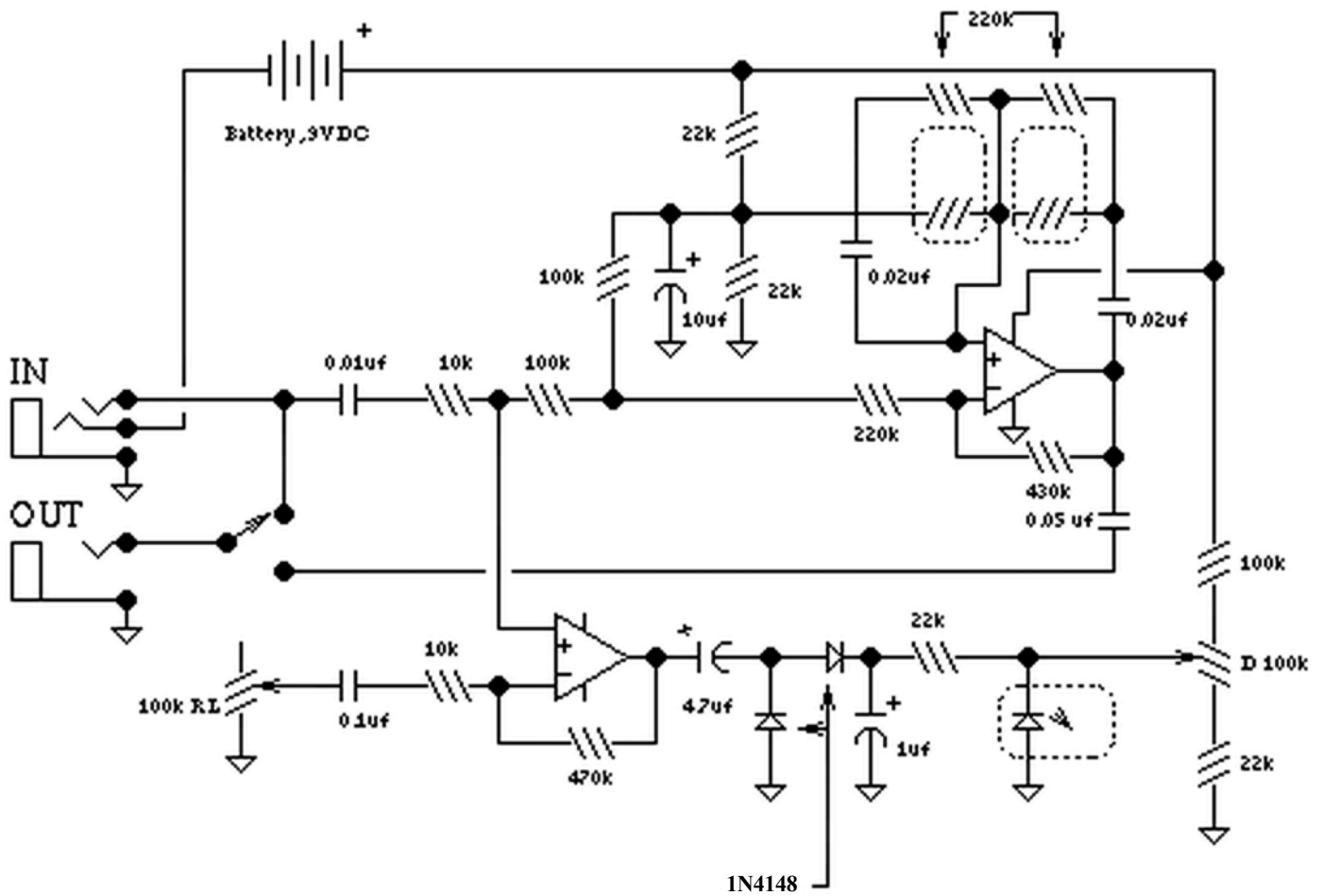
DOD Compressor 280A



This is the original schematic, but it looks funny to me. I think that there should be a 100k resistor at the (-) input of the second op amp to make it a pure inverter. As it is, that stage would have a very large voltage gain, unbalancing what I think works as a full wave rectifier/current source for the LED in the compression feedback loop. I would expect that the proper circuit is as shown in the fragment below. I think the VTL5C2 LED/LDR module could be replaced with a CLM6000 if you could find one of those.

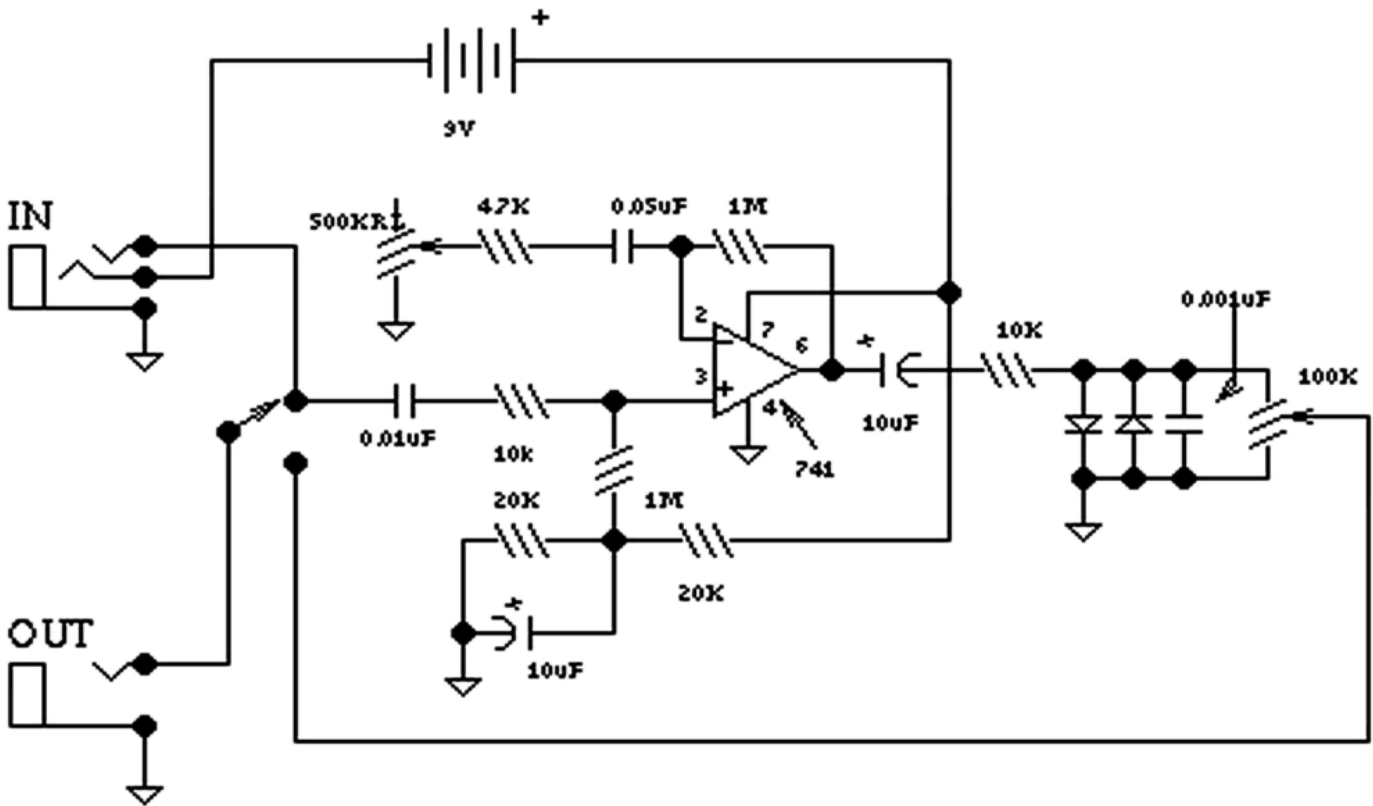


DOD Envelope Filter 440



Op amps are each 1/2 of TL022 dual low power op amp. LED/LDR module is unknown, but is probably a Vactec VTL module with LED to center-tapped LDR.

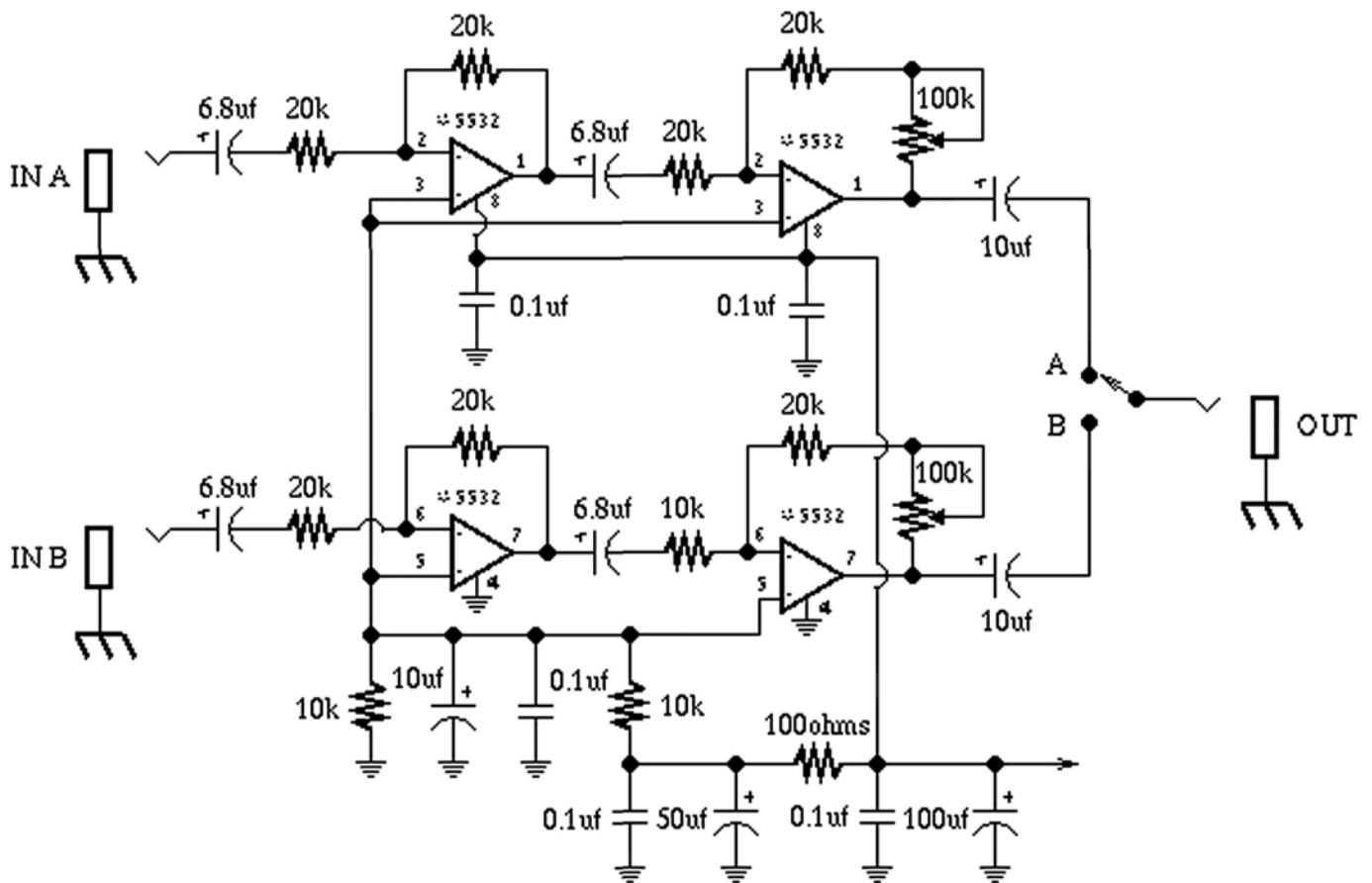
DOD Overdrive 250



The DOD Overdrive 250 is Yet Another 741 With Two Diodes On The Output. It is almost exactly the same as the MXR Distortion Plus, and a number of other units.

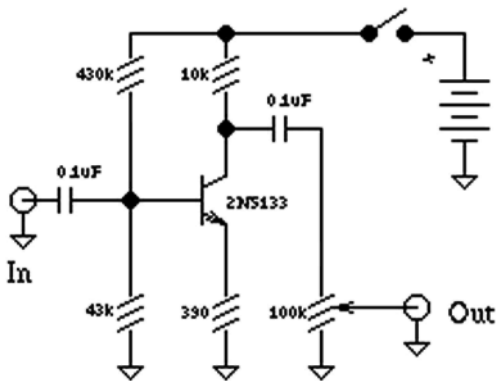
Dual Pre-Amp & A/B Box

Designed by Rick Barker



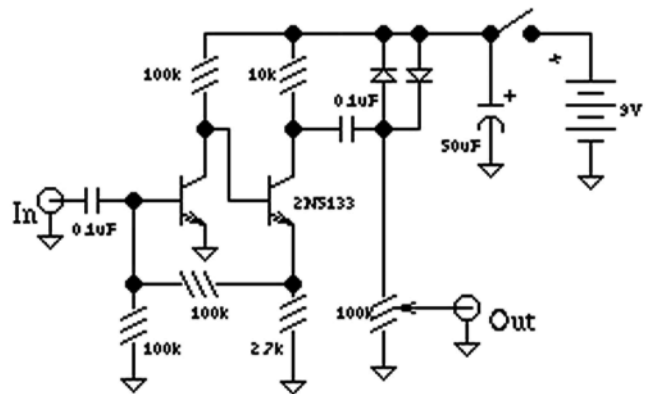
This low noise preamp & a/b box was originally designed for switching between different harmonic a mics.

ELECTRO HARMONIX BOOSTERS

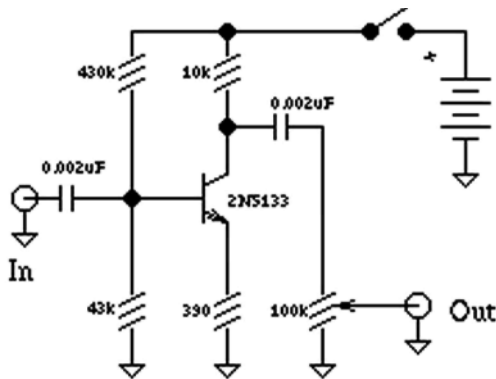


LFB-1, LFB-2, EGO

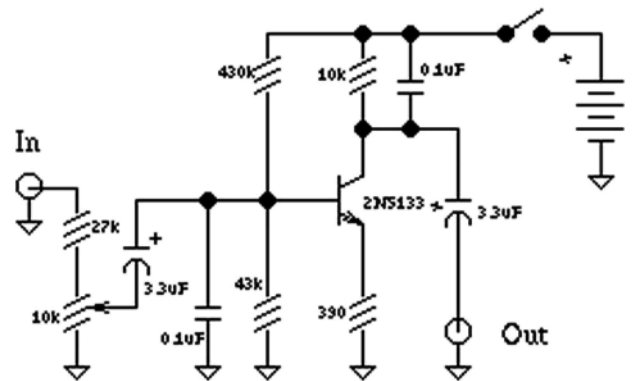
Other variations on the LPB-1 include a BC239 with a 100k resistor from base to ground and a 11k resistor between base and collector.



Muff Fuzz / Little Muff Pi (early)

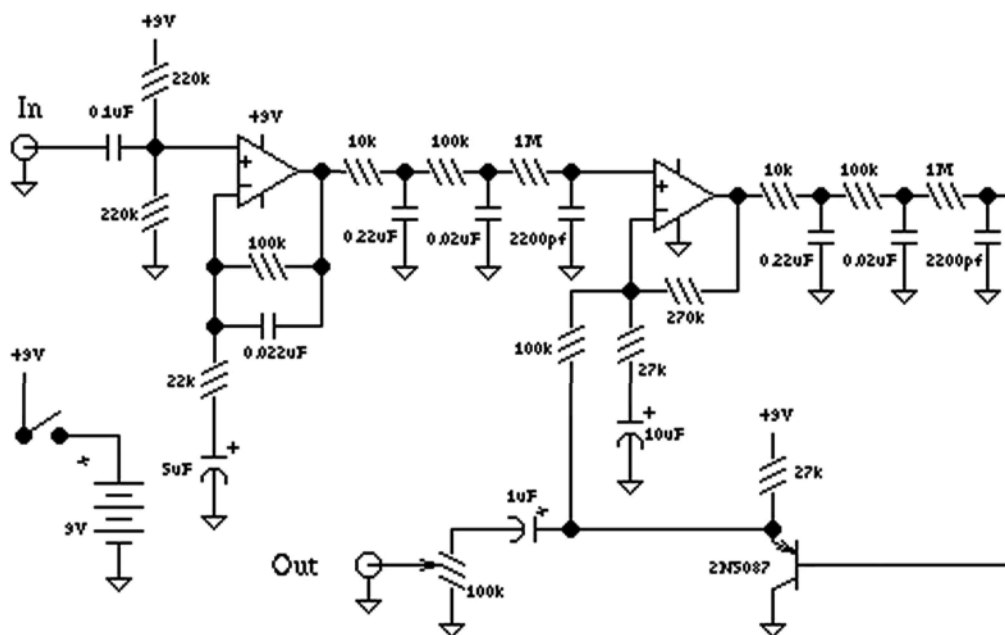


Screaming Bird/Tree

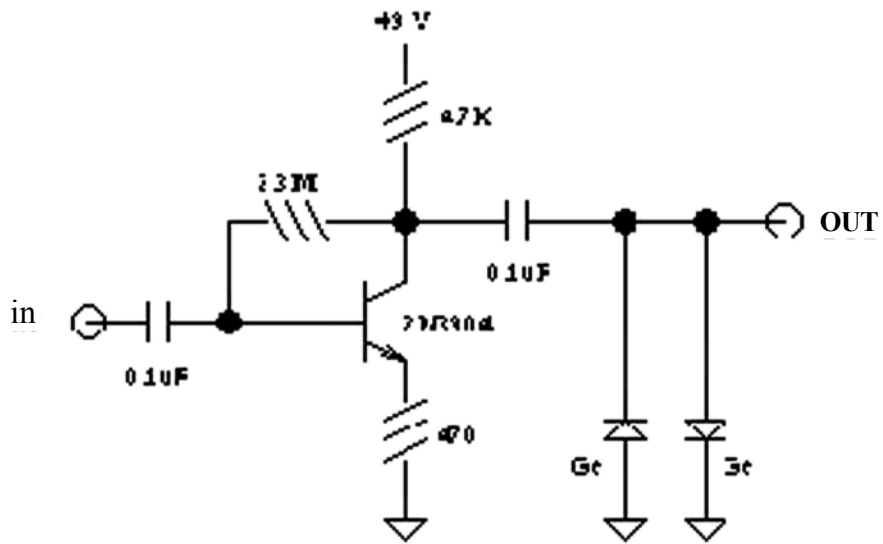


Mole/ Hog's Foot (Old Version)

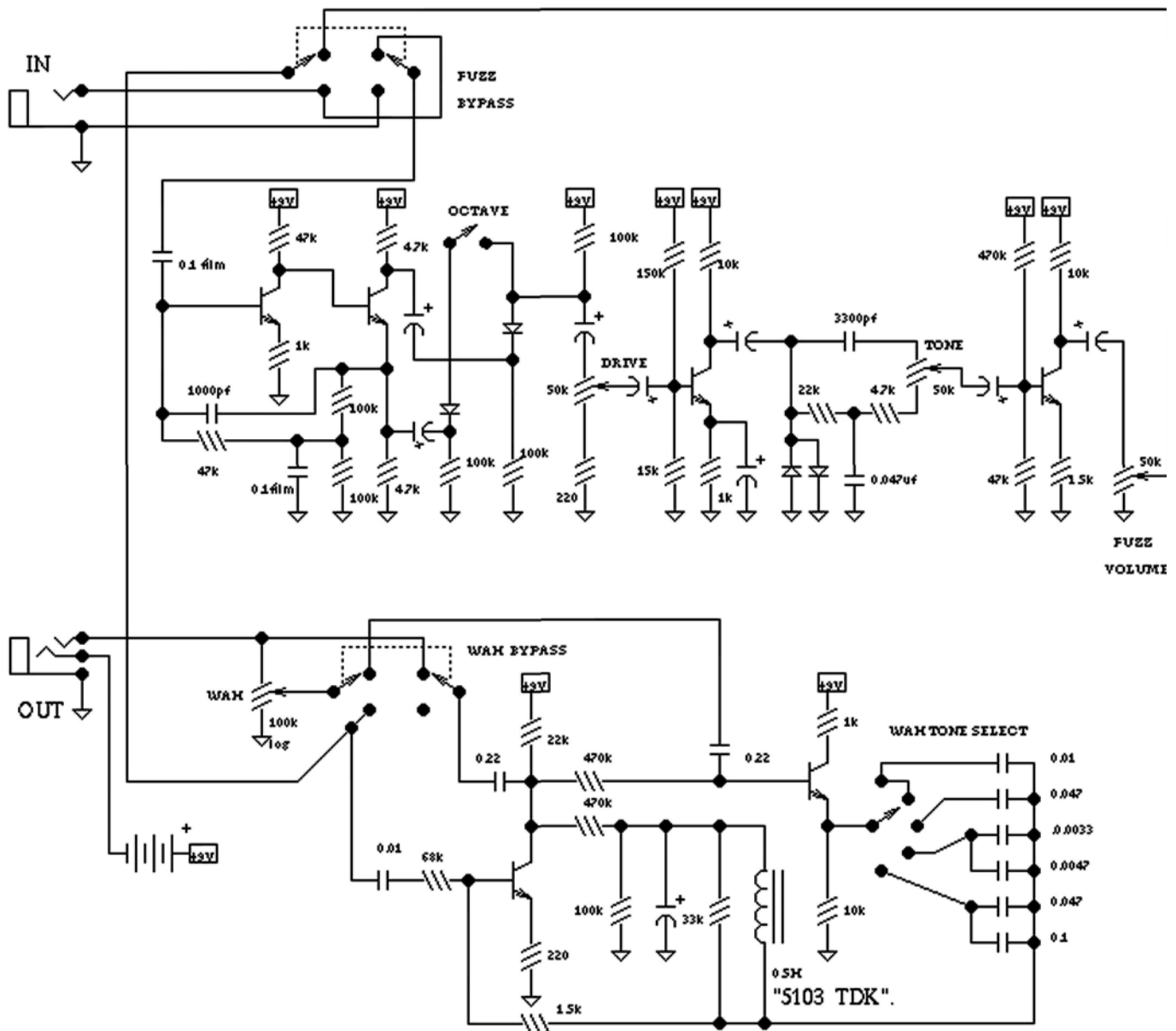
Hog's Foot (new)



ELECTRA DISTORTION



FOXX FUZZ-WAH



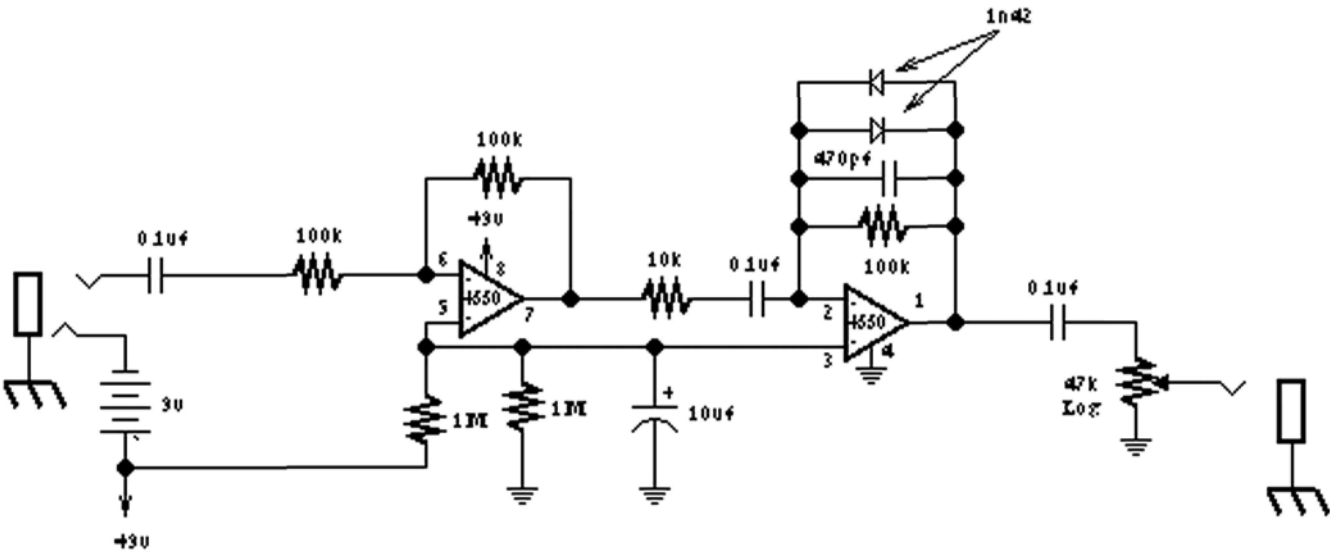
The Foxx Fuzz Wah includes a fuzz, an octave effect, a wah pedal, and in later versions a volume pedal all in the same box. The box, by the way, is covered in blue or red no-f ooling stiff plastic fuzz. The wah has four different resonant frequencies selected by a rotary switch. The inductor should be relatively easy to find, as it looks to be a somewhat standard part. The volume pedal action is the default when wah is bypassed. Max volume is with the pedal all the way back, very odd.

- All transistors 2N3565-R249, NPN silicon in little plastic button packages.
- All diodes germanium
- All unmarked electrolytic capacitors 10 uF, 16Vdc.

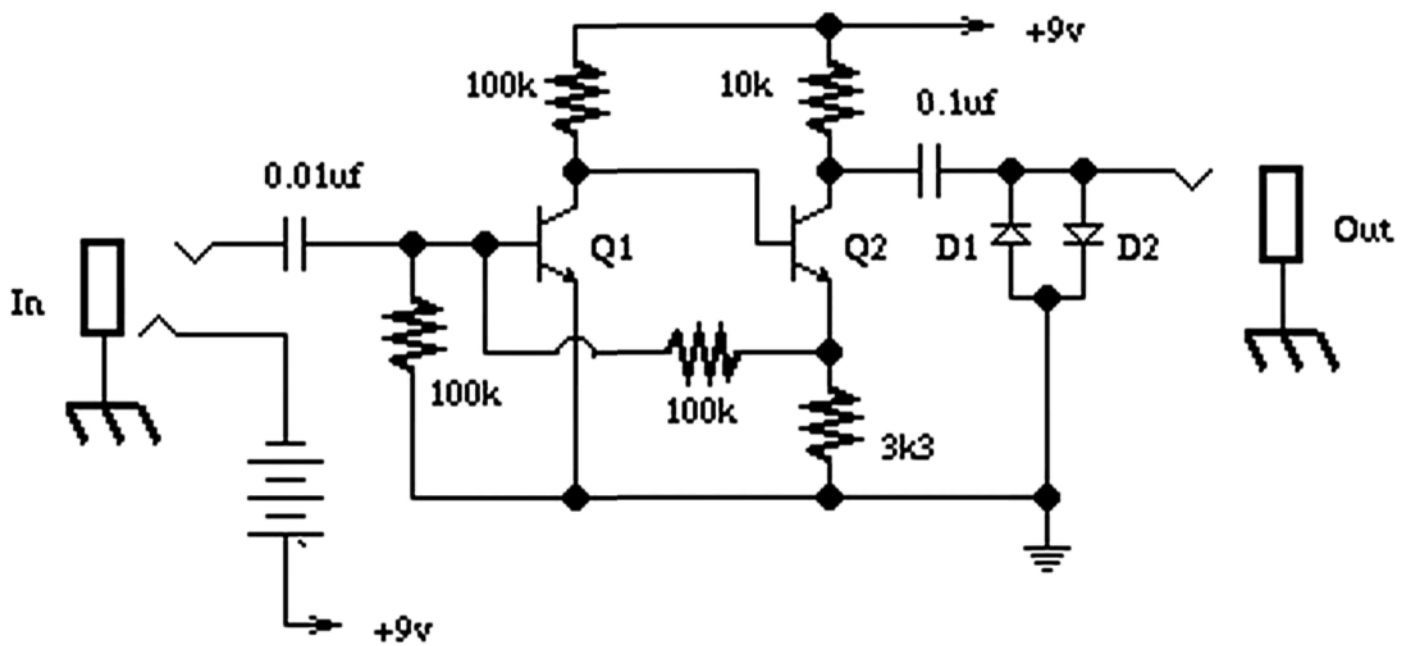
The fuzz and octave section MAY be a copy of the Octavia pedal.

Note that the Wah pot is log (audio) taper. The wah sound is really sensitive to the positioning of the wah pot's rotation in the rack-and-pinion.

Fuzz 001 - Unknown Commerical Source



Distortion Booster

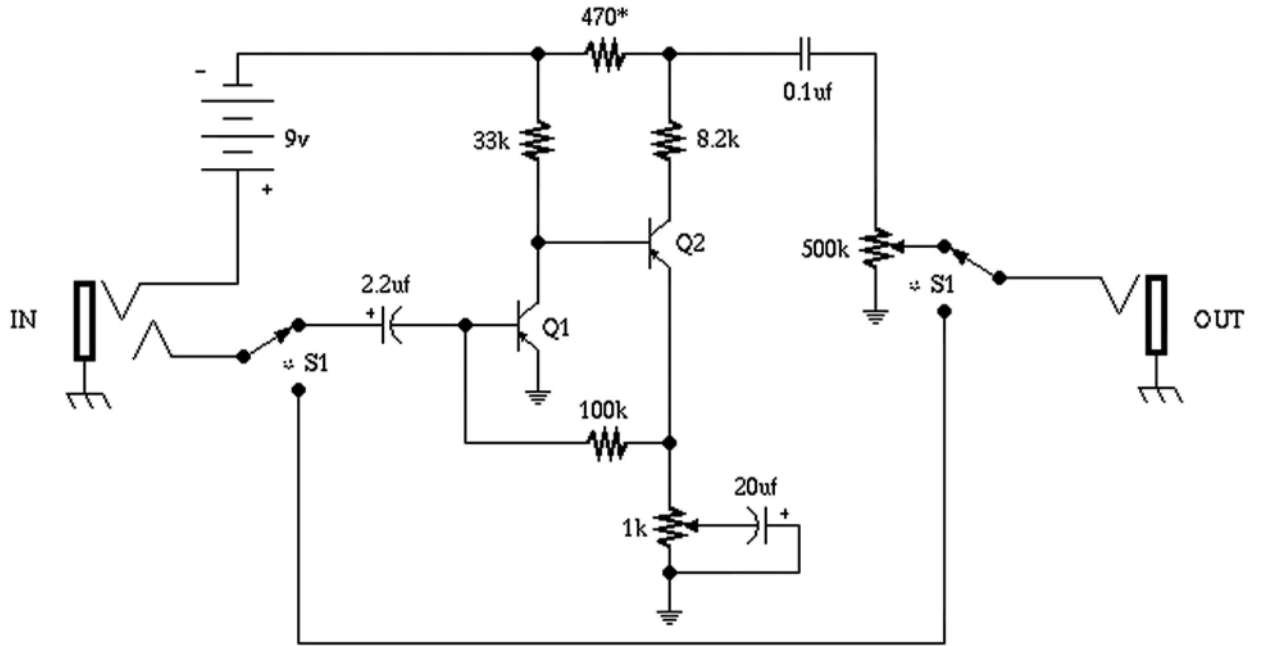


Q1 and Q2 are BC108

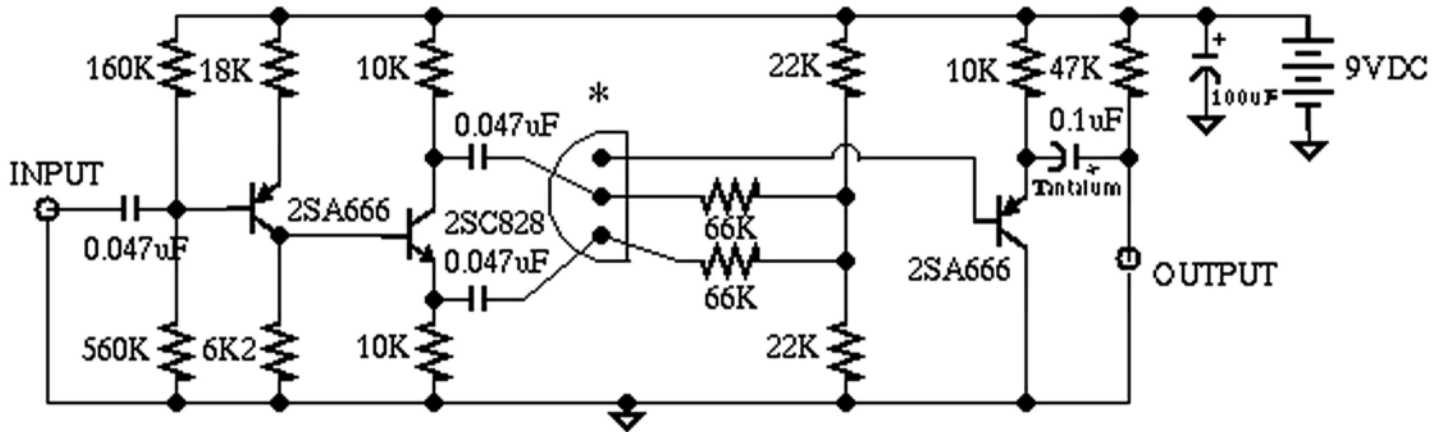
D1 and D2 are silicon or germanium (pick you* favorite flavor) signal diodes, -
make unknown...

Fuzz Face

Dallas Arbiter



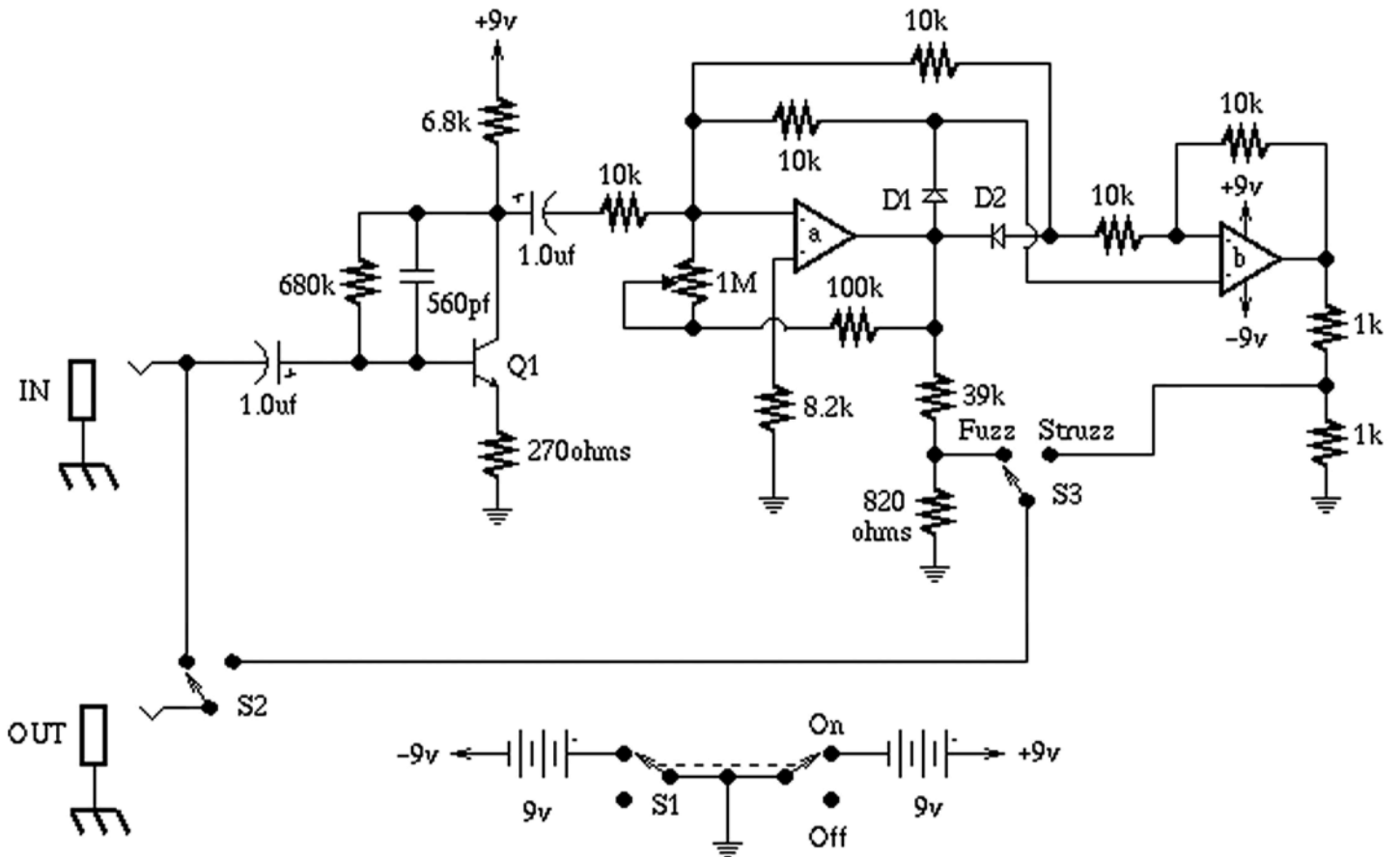
Armstrong Green Ringer



The transistor marked "*" has no markings other than three stripes; green, blue, white, from top to bottom. It is PROBABLY a low gain NPN used as a dual diode with the anodes connected together at the base of the final transistor. The continuity test on the device shows no conductivity except that the topmost pin conducts when it is positive of the pins in the middle and other side; otherwise, no conduction. This is what I would expect if it were an NPN with the same pinout (base, collector, emitter) as the other transistors.

Guitar Effects Unit (Octaver-Fuzz)

extracted from ETI-Canada, January 1980



Q1 is MPS6515

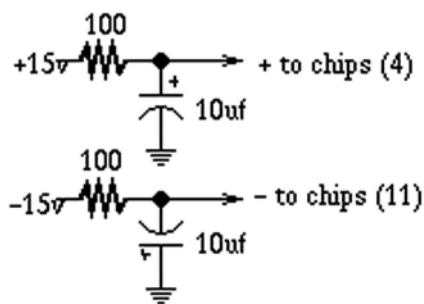
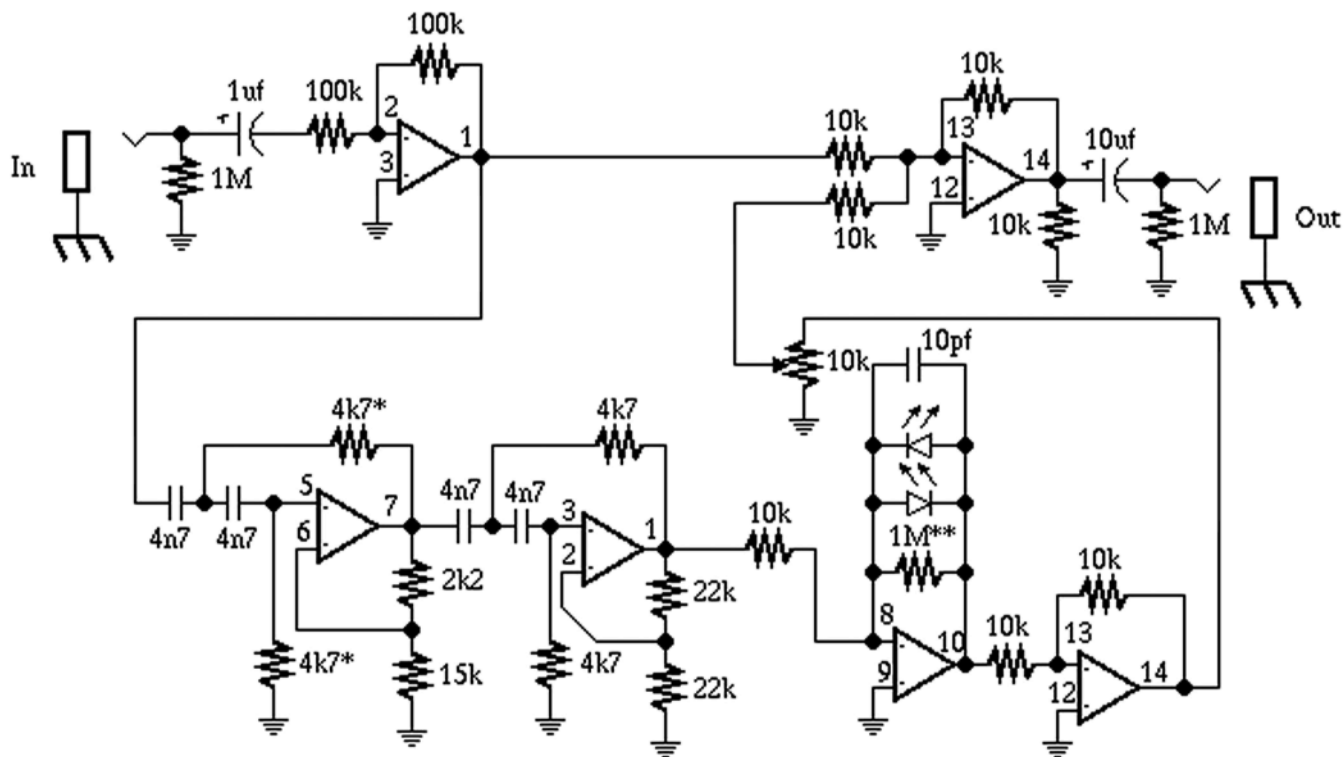
D1 and D2 are 1N4148

The IC is any low noise dual op-amp, shown is the 4558.

Switching could be improved with a full bypass mod.

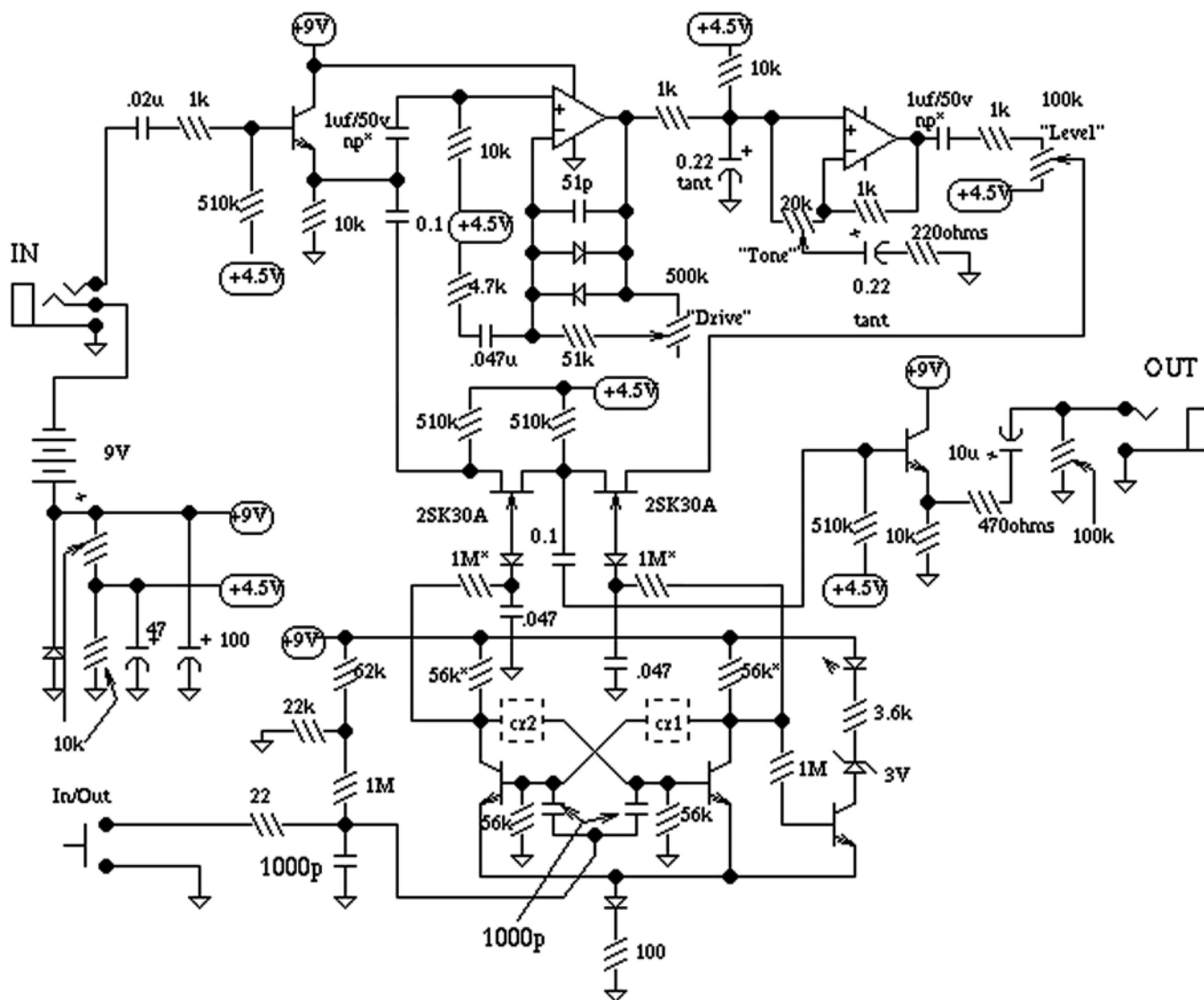
The GEU is good sounding octave fuzz, with an optional mode of just fuzz. The fuzz is a fully rectified signal and is quite chewy. For some the Fuzz alone might not be loud enough, this can be fixed by raising the value of the 820 ohm resistor and lowering the 39k one. Or one could just replace both with a normal volume pot for a more standard approach. The "struzz" is the fuzz with an octave higher signal mixed in. Good for single notes and leads.

Harmonic Sweetener



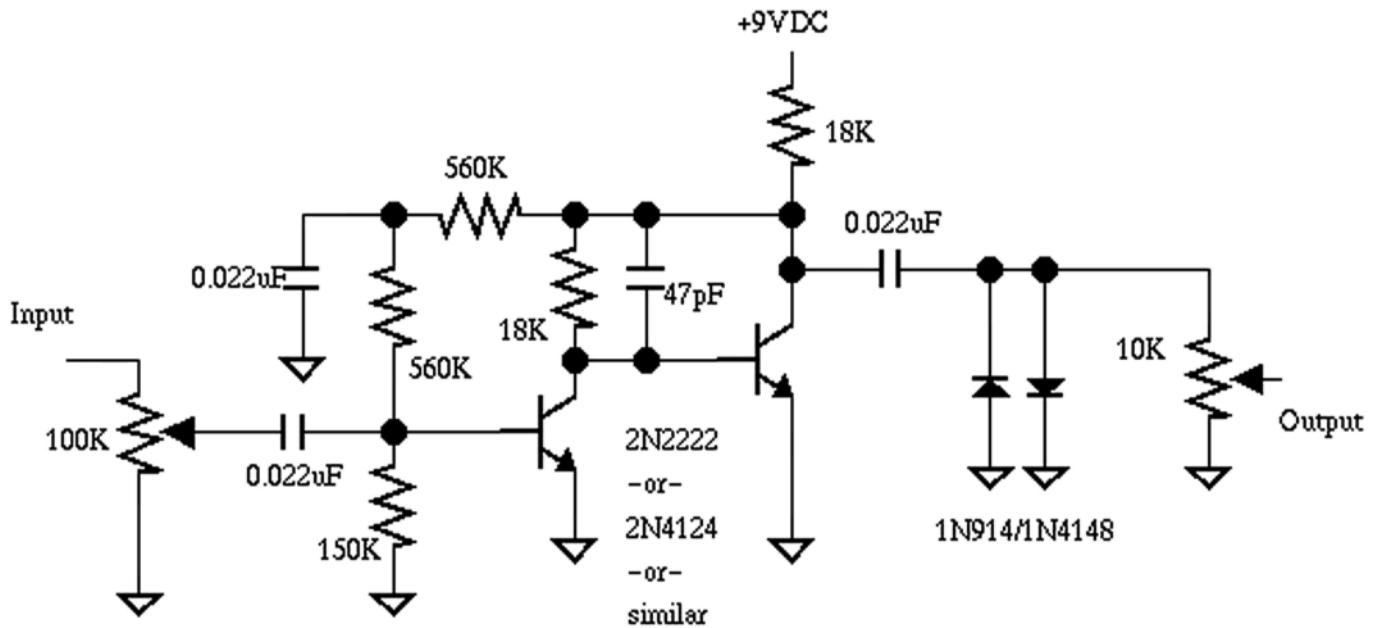
A couple of red led's will work nicely for the clipping section. The op-amps shown are TL074 types with 3 of the 4 amps used. Possible modifications include changing the resistors marked * to a 10k dual-ganged pot for a tunable filter, and/or changing the resistor marked ** to a 2.5 M pot for a drive option.

TS-9 Tube Screamer



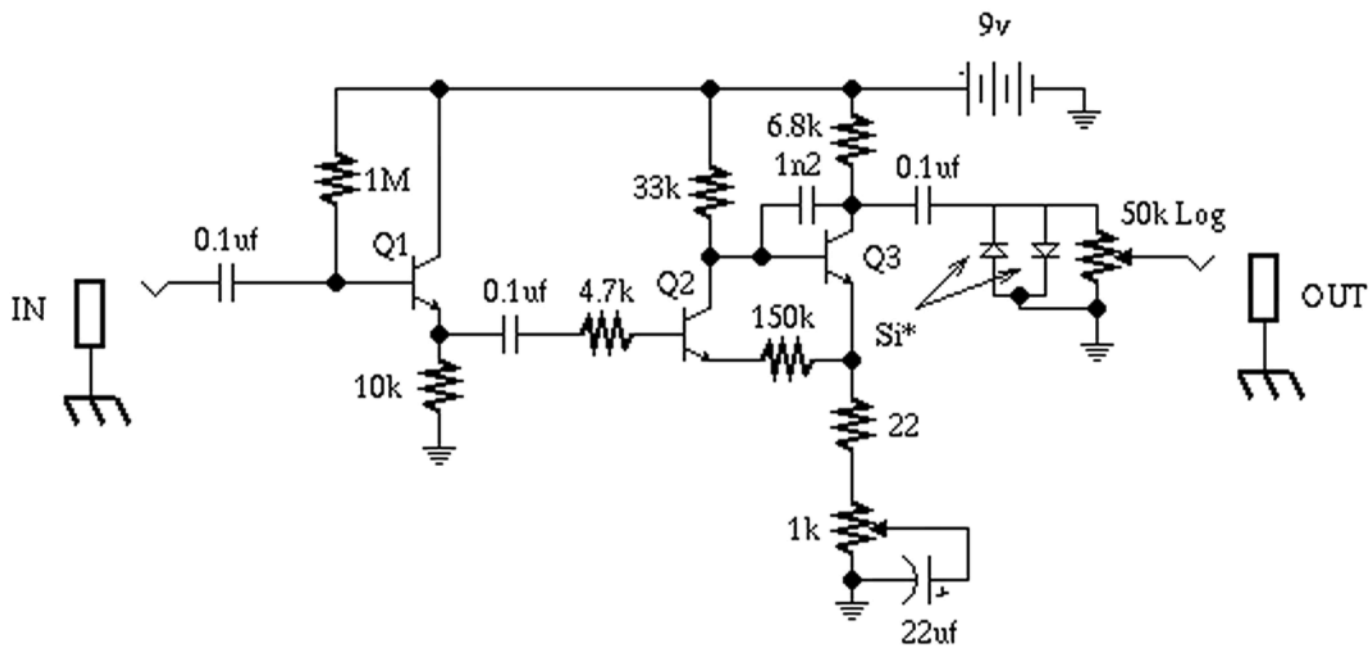
Op amps are in a dual 8 pin dip, 4558. All transistors 2SC1815. All diodes silicon signal diodes, 1N914 or similar, np* = nonpolarized resistors denoted by * marked as 1M on original might be 22k and those marked as 56K might be 10k. erf 1 and cr2 are a special cap and resistor in parallel, the cap is 51 p the resistor is 56k.

Jordan Boss-Tone



The Jordan Boss-Tone is another distorter from the Inna-Gotta-Have-A-Fuzza era of effects. This circuit fragment shows only the effects circuit, not the in/out switching and the battery circuit. A DPDT stomp switch and input-jack battery switching would finish this up nicely. Like many others, the circuit is based on a collector voltage feedback single transistor circuit with a second transistor as a buffer following the first gain stage. Others in this genre are the Vox Tone Bender and the venerable Fuzz Face, although these do not have a diode-clipping limiter after the gain stages.

JSH Fuzz

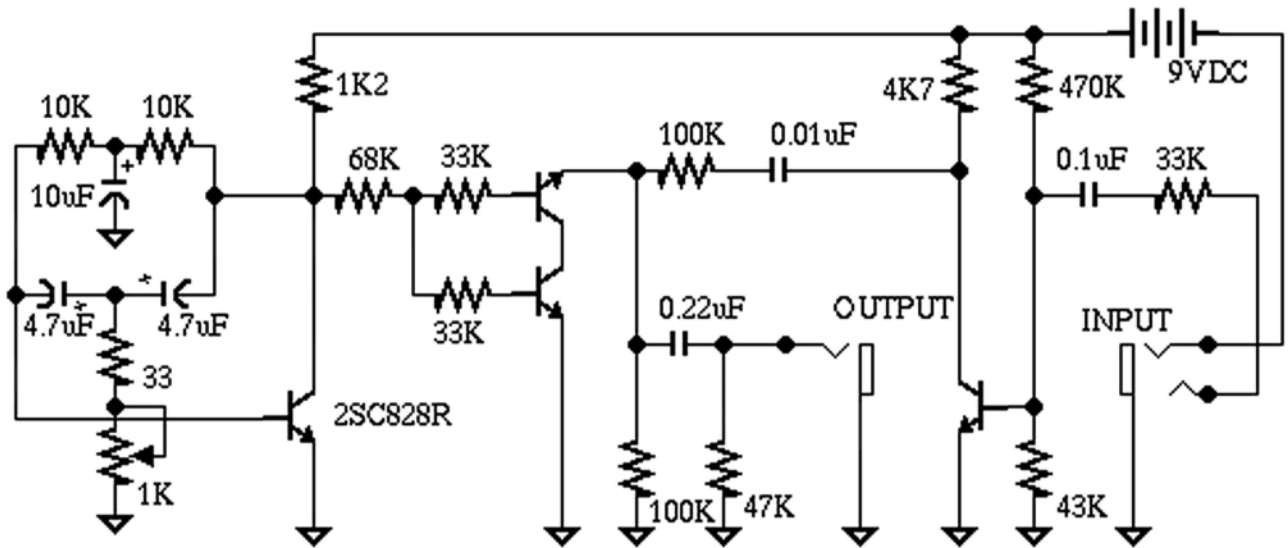


*pretty much any silicon signal diode can be used here

Q1 - BC238B

Q2, Q3-BC239C

Model FZUI

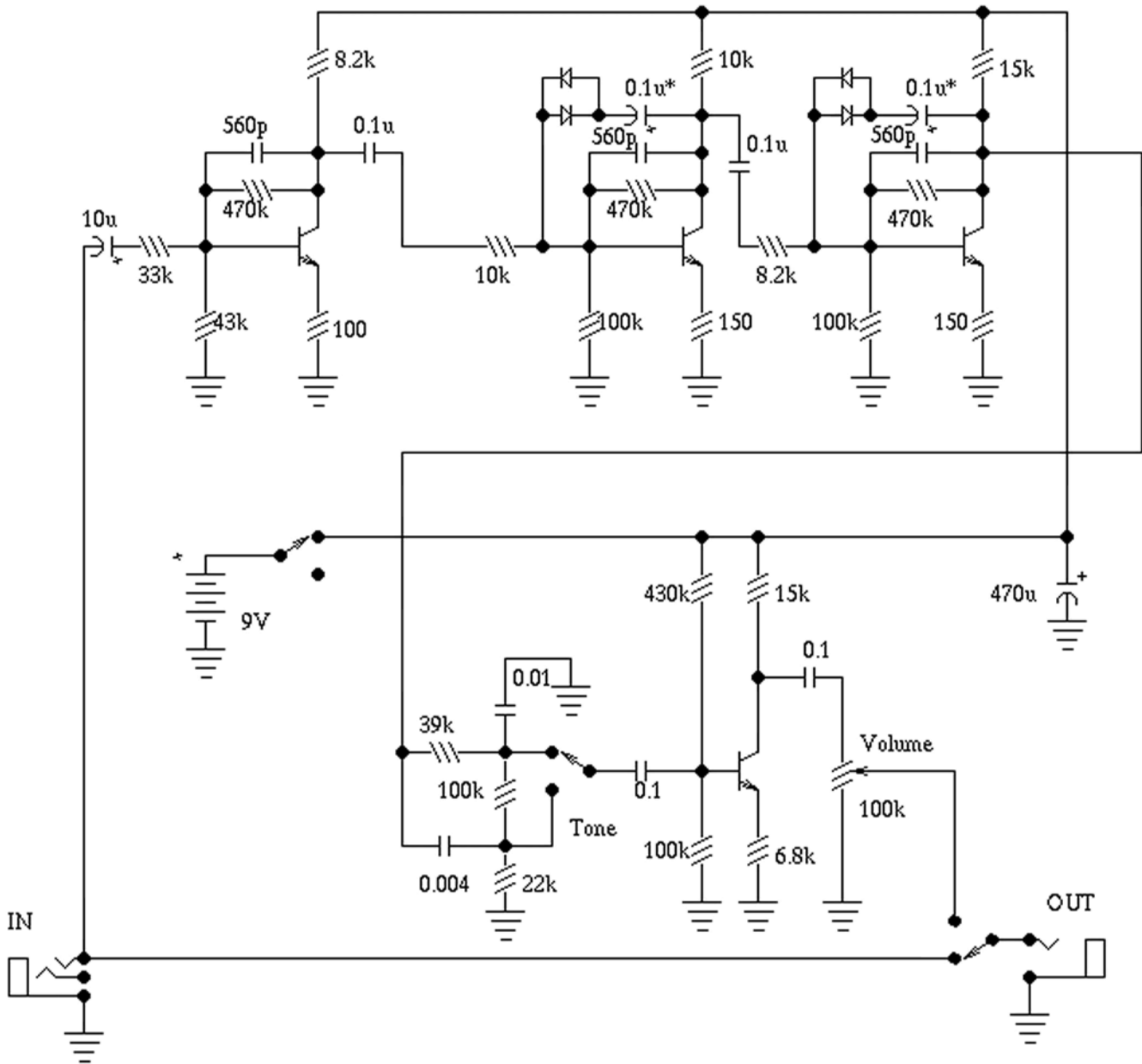


3X 2SC828P

Kay Tremolo **Model T-1**

The Kay model T-1 tremolo is a very simple circuit. A twin-T oscillator circuit drives two bipolar transistors to load the signal down after it is amplified by a single input stage. The sound of this is more like the "repeat percussion" effect of Thomas Organ Vox amplifiers than the smooth variation in loudness of tube based amplifier tremolos, but it is a useful sounding effect; just different. The pedal itself is a cheesy plastic case with a wah-pedal like treadle which controls the speed of the oscillator. There is no tremolo depth control, and the in/out switch is not shown on the schematic from the inside of the case, although it is a very conventional DPDT bypass. The bypass was unique in that you had to slide a switch manually, no stomp switch on this one.

Electro-Harmonix Little Big Muff

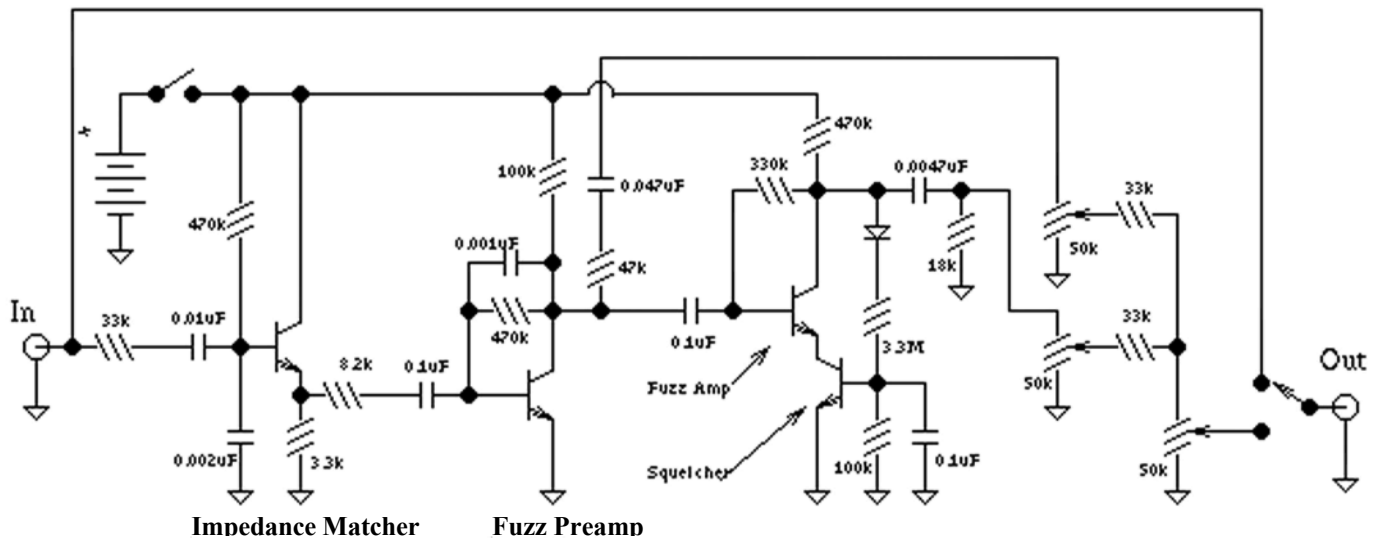


The EH Little Big Muff could probably be improved with modern input jack power switching and a DPDT bypass.

This is the original schematic. The diode and transistor types are unknown. Probably any high gain NPN and IN914s work.

The caps marked with a * have been reported to work great at 1 .0µF.

Maestro Fuzz



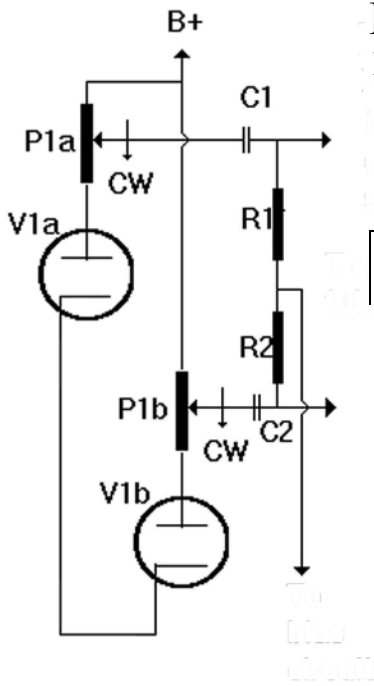
The Maestro Fuzz is reputed to be the fuzz used in the recording of the Stones' "Satisfaction". The transistors are house numbered "991 -002298" and the diode is house numbered "919-004799". They are probably all germanium devices. The use of a squelch device is somewhat unique, possibly put there to tame hiss and noise during quiet passages between notes. The two 50K pots which have their wipers connected by resistors are wired so that as one increases, the other decreases, giving a pan from one point in the circuit to another, probably changing the amount of distortion. The last 50K pot is an output level control.

This unit could probably benefit from a modem DPDT switch setup to completely isolate the circuit when it is switched out, and a modem input-jack power switching arrangement.

Master Volume for Tube Amps

By Emory Smith (esmith@baste.magibox.net)

I have sold quite a few of these mods. This works especially good on Fender amps. Has a good, smooth, natural distortion.



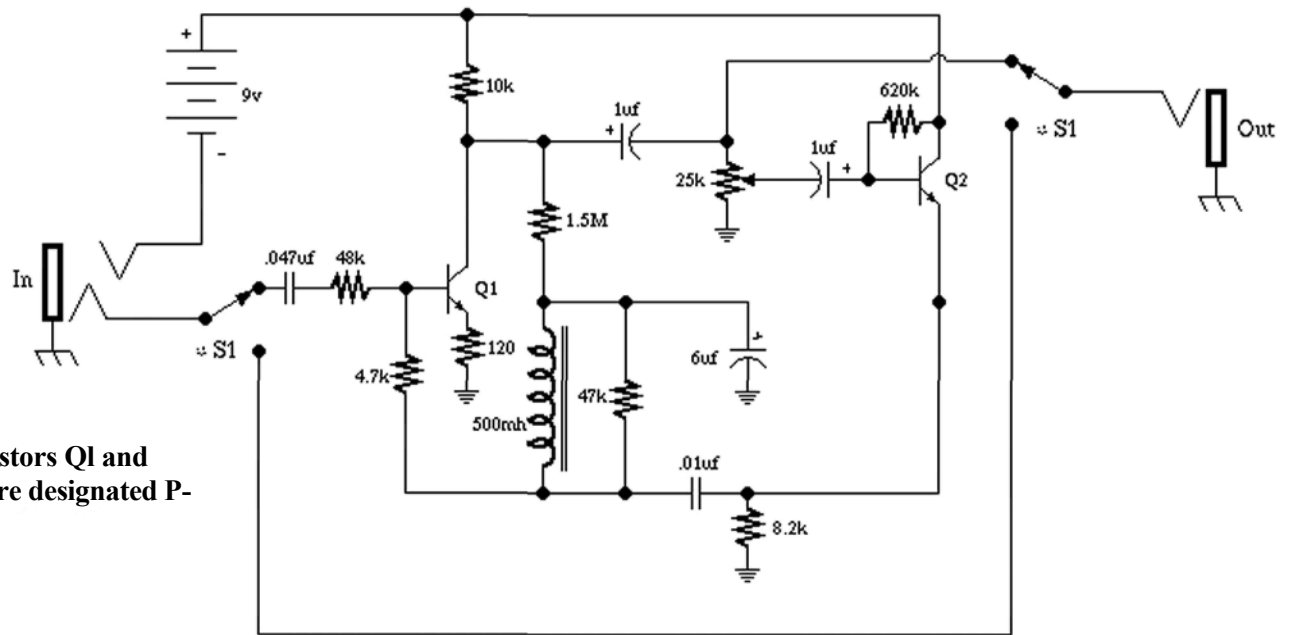
To power
tube grids

P1 - Dual 100K 2Watt R1,
R2, C1 and C2 are the
existing ones V1 - Existing
phase inverter

To
bias
circuit

Maestro Boomerang

(Wah-Wah)

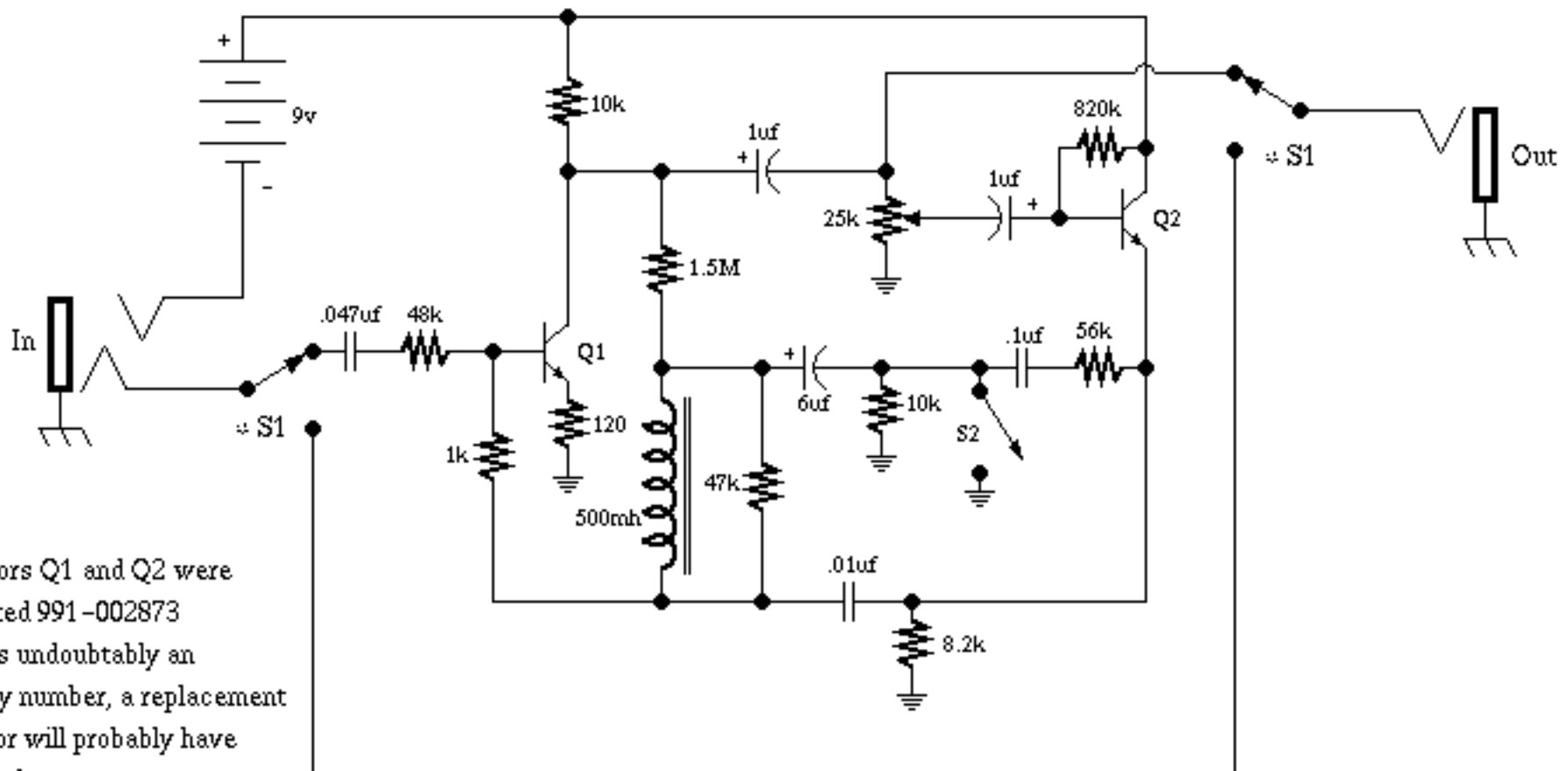


-Transistors Q1 and Q2 were designated P-

Model EG-1

Maestro Boomer 2

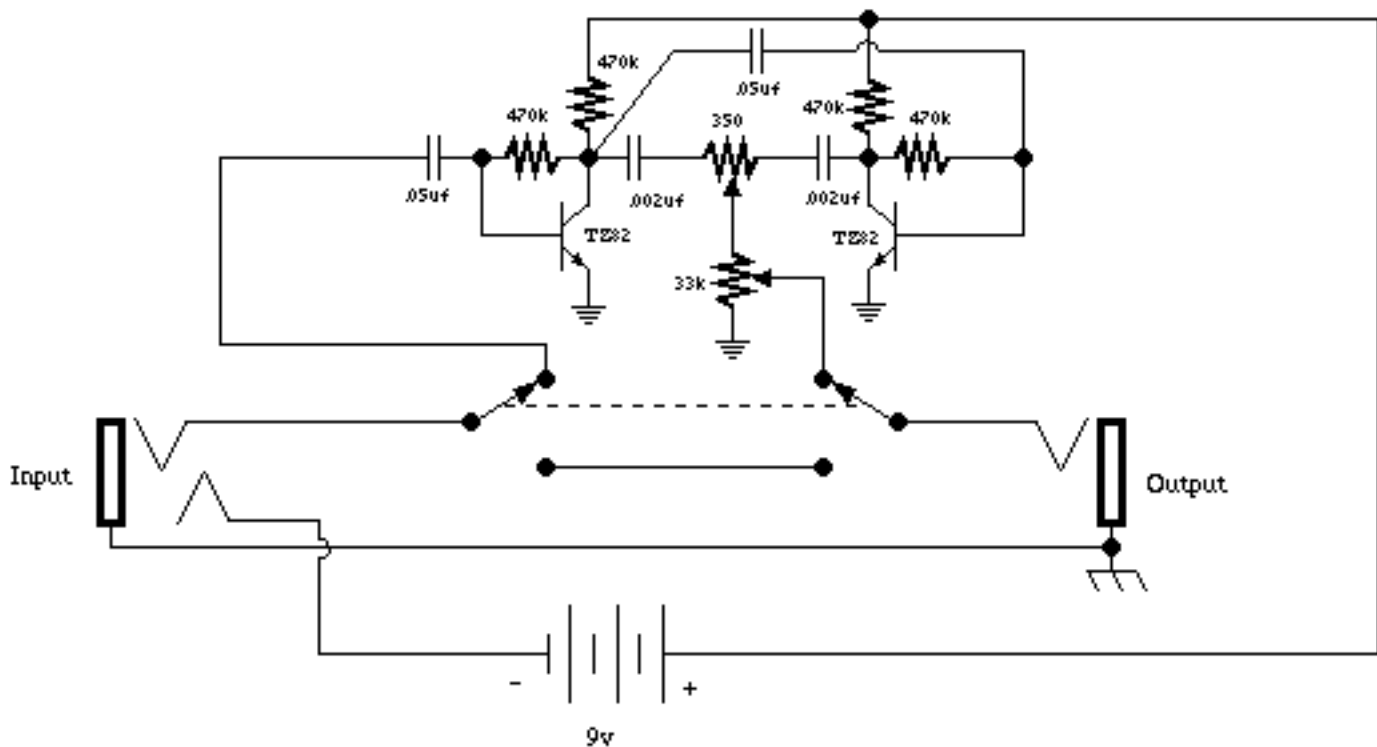
(Wah-Wah / Volume)



-Transistors Q1 and Q2 were designated 991-002873
This was undoubtedly an inventory number, a replacement transistor will probably have to be used.

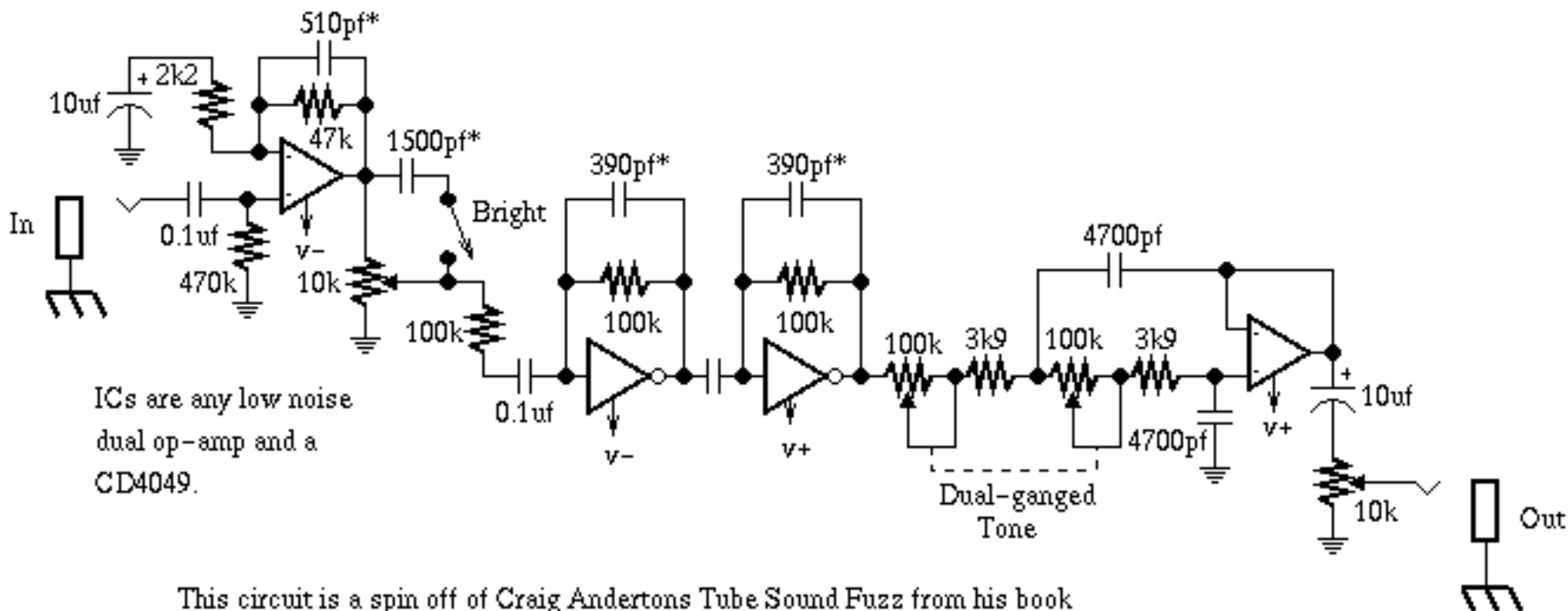
-S2 is used to switch the pedal between its modes of wah-wah (off as shown) and volume (on).

Mosrite Fuzz-Rite



Modified Tube Sound Fuzz

by M. Hammer

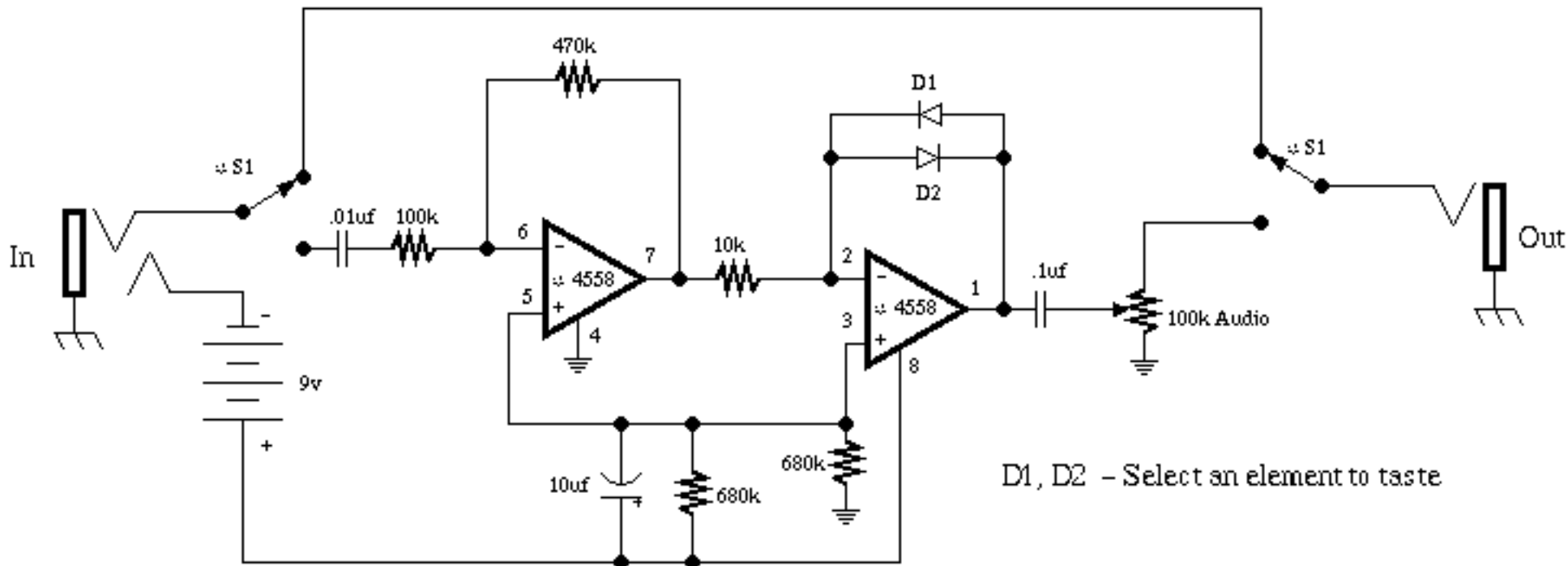


ICs are any low noise dual op-amp and a CD4049.

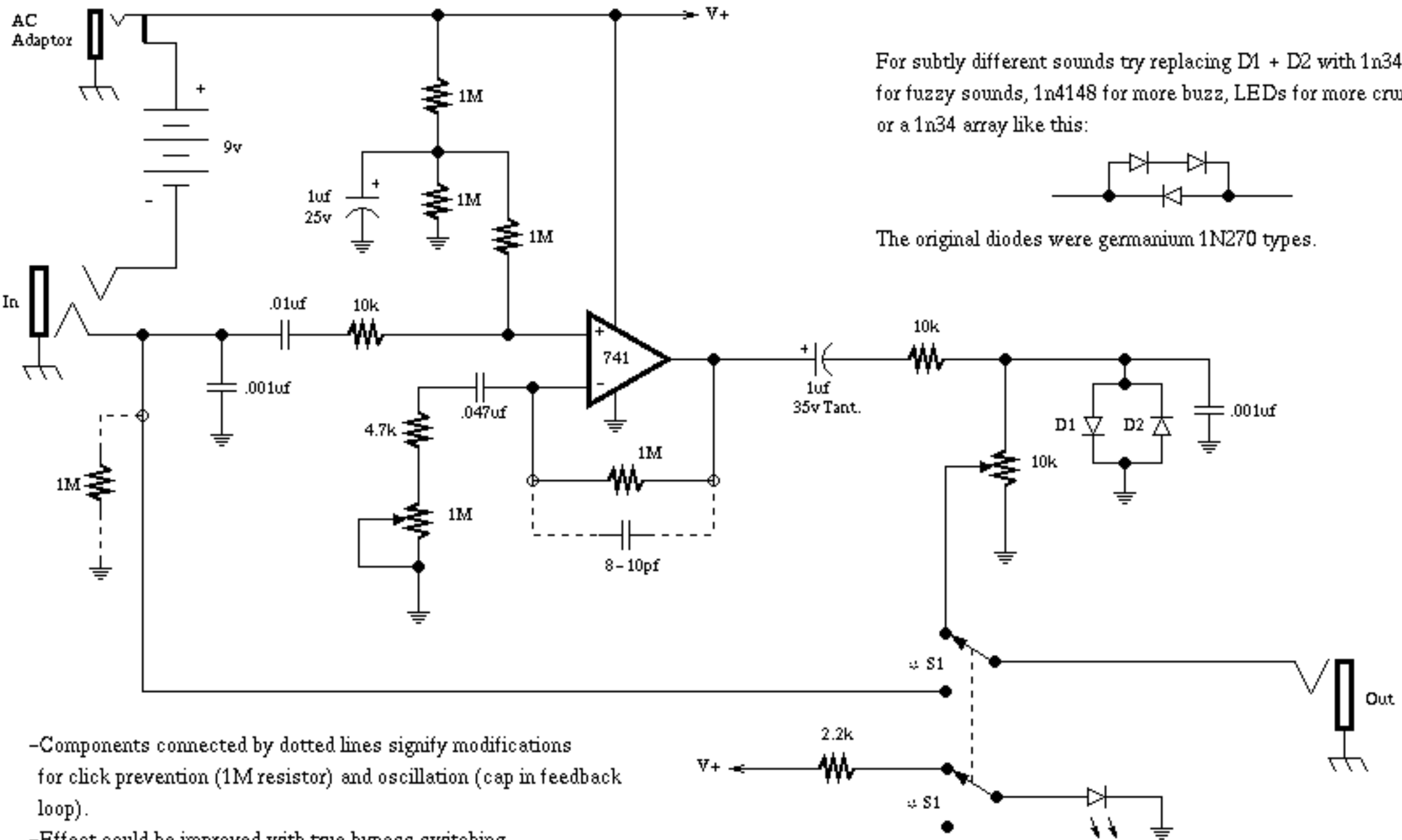
This circuit is a spin off of Craig Anderton's Tube Sound Fuzz from his book *Electronic Projects for Musicians*. This only uses 2 stages of a CD4049 hex inverter/buffer the rest were left out of the schematic to keep it simple. Components with a * are suggested values, substitutions can be made freely within 30%.

Muff Fuzz

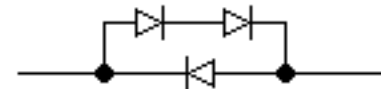
Electro Harmonix



MXR Distortion +

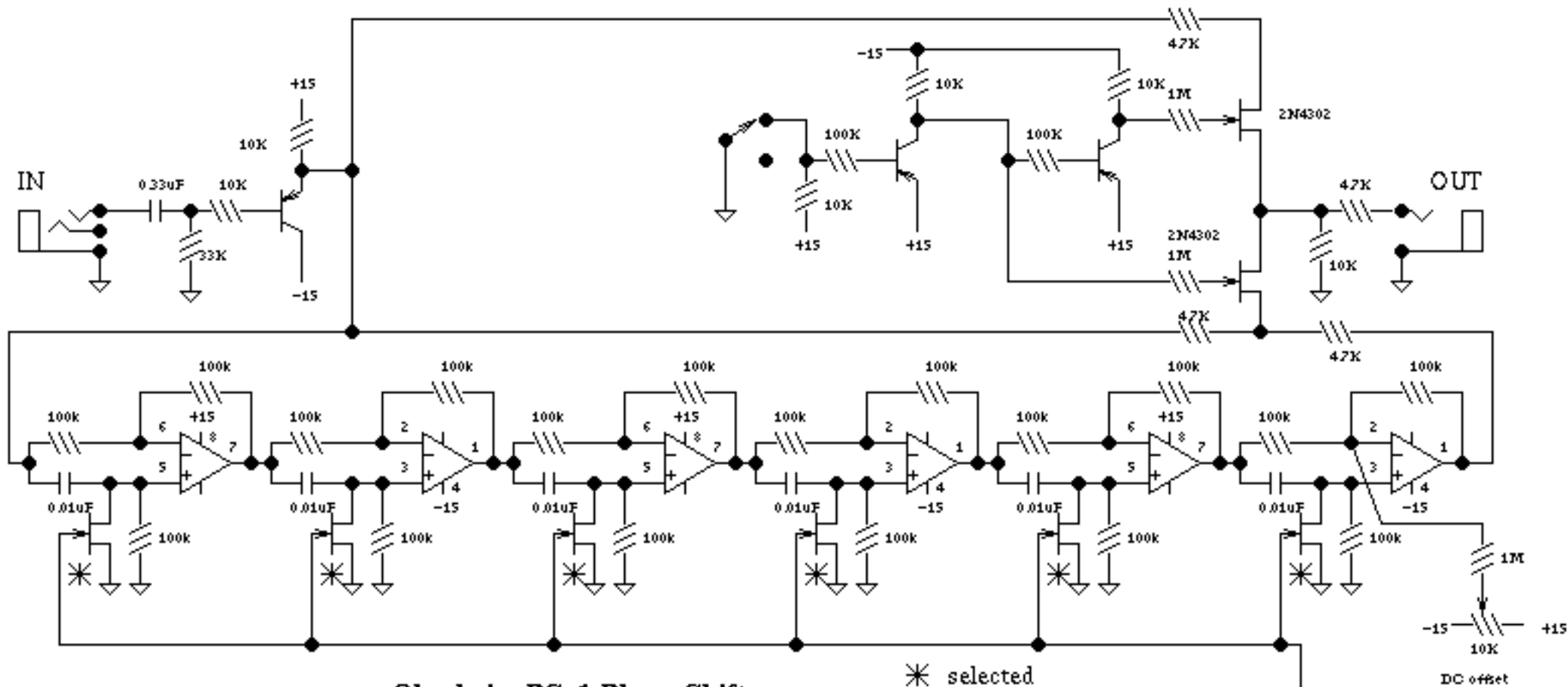


For subtly different sounds try replacing D1 + D2 with 1n34's for fuzzy sounds, 1n4148 for more buzz, LEDs for more crunch, or a 1n34 array like this:



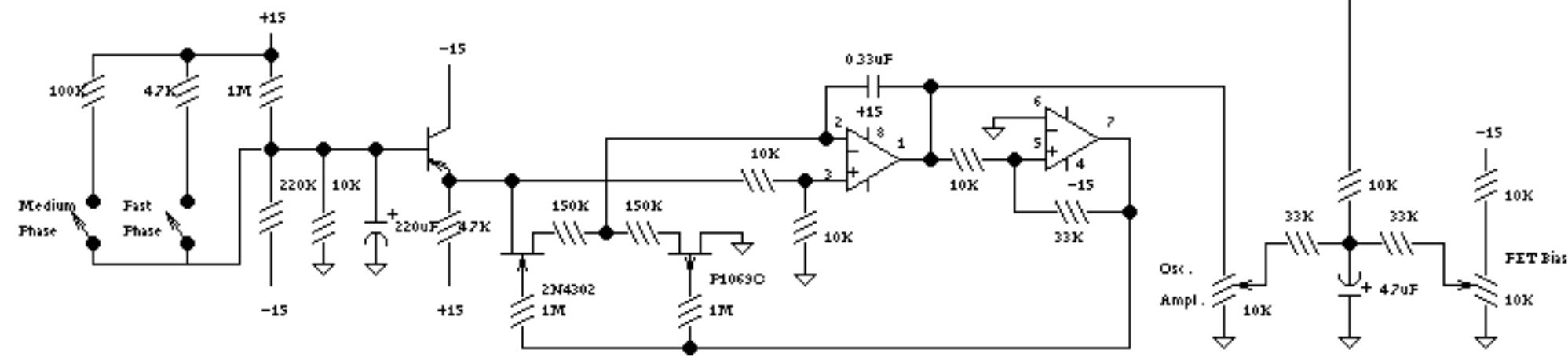
The original diodes were germanium 1N270 types.

- Components connected by dotted lines signify modifications for click prevention (1M resistor) and oscillation (cap in feedback loop).
- Effect could be improved with true bypass switching.

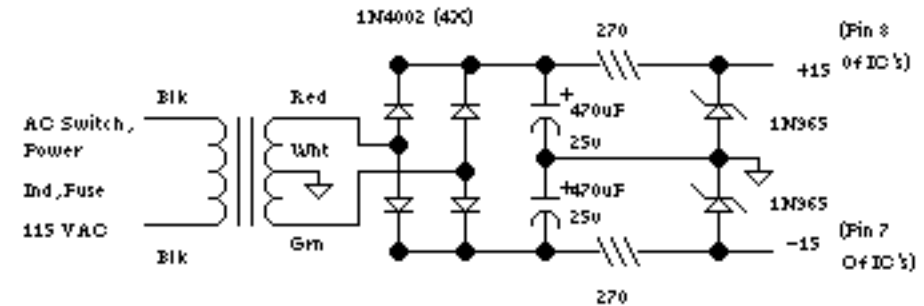


Oberheim PS-1 Phase Shifter

* selected



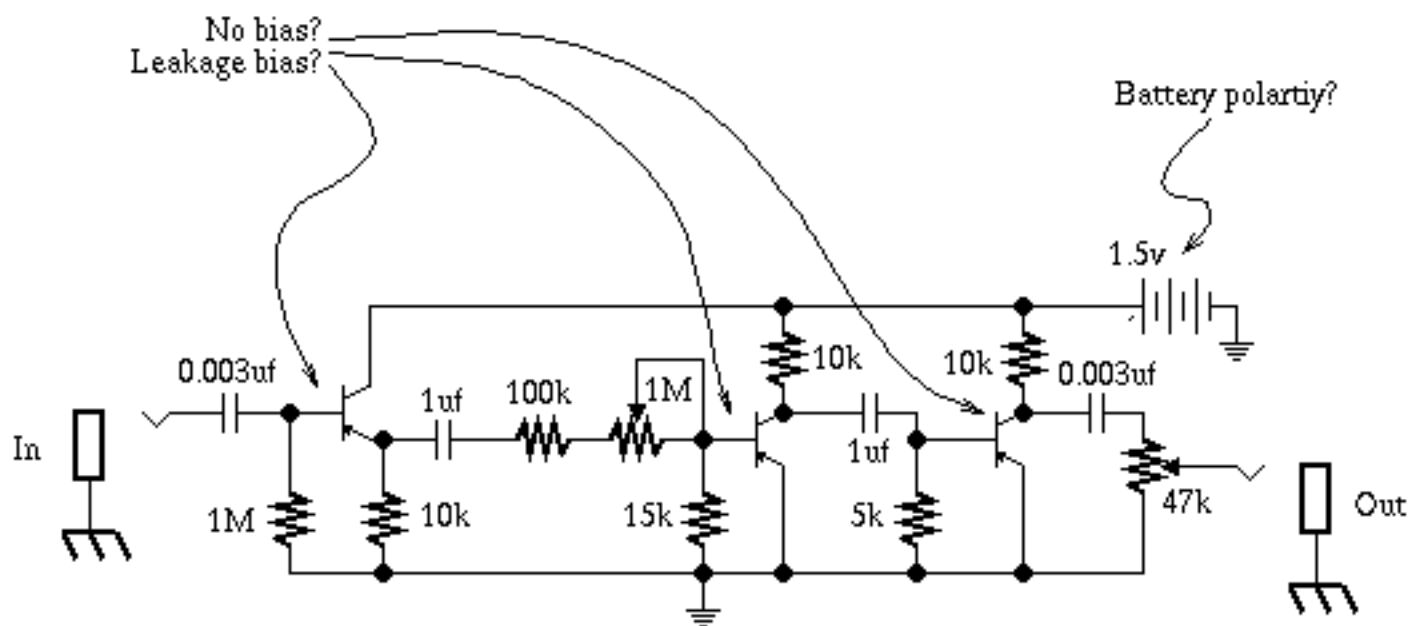
All IC's are 1458 dual op amp. All bipolars are 2N3638A.




Adjustment procedure:

1. FET Bias: With Osc. Ampl. trimmer fully counterclockwise, adjust FET Bias so that audible phasing sound is in the middle of its range.
2. Osc. Ampl.: Adjust for desired depth of phasing sound.
3. Output Offset: adjust for minimum "click" when Off/Slow Phase switch is operated.

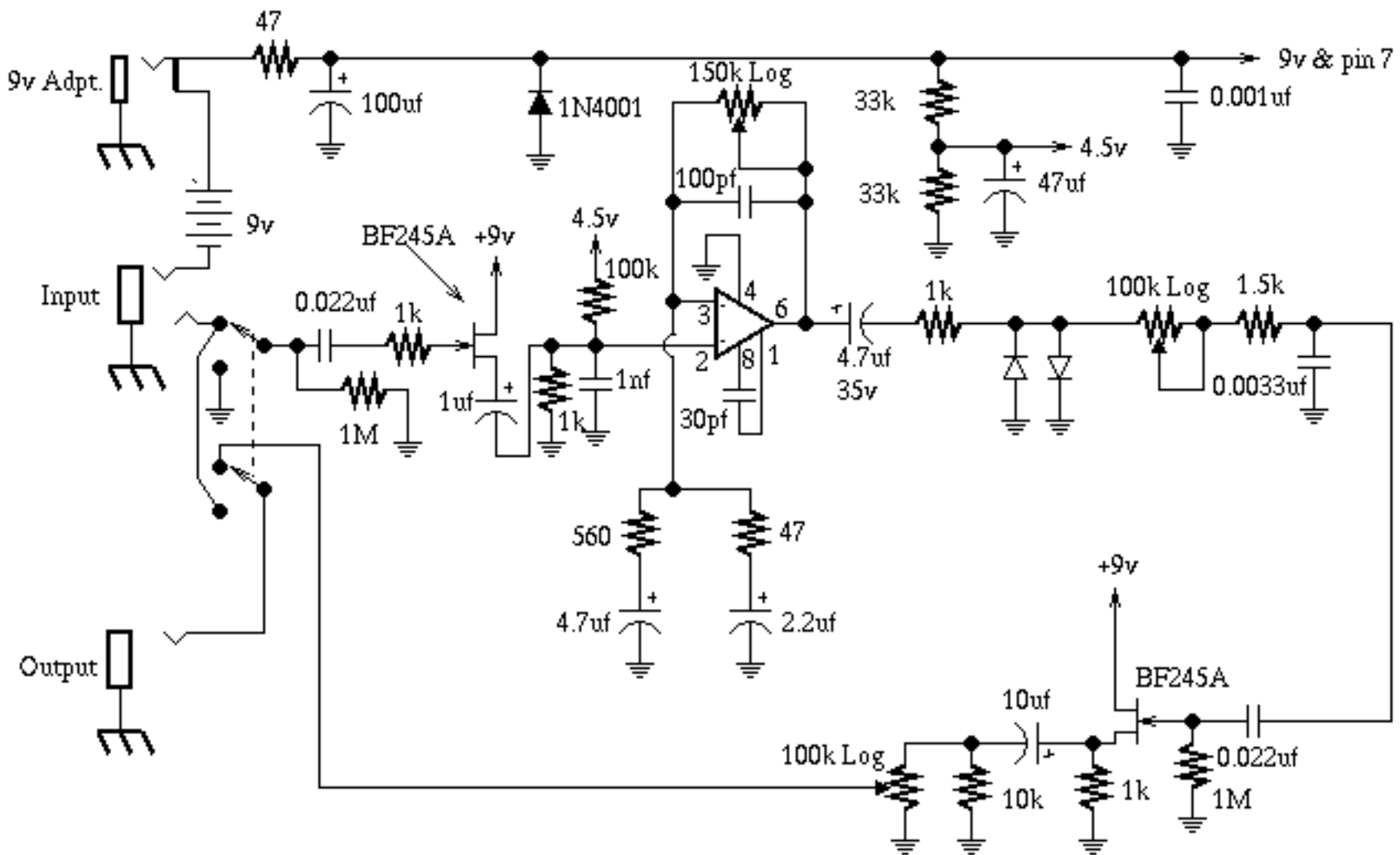
Olson New Sound



 = 2SB175

Runs on one 1.5v battery!

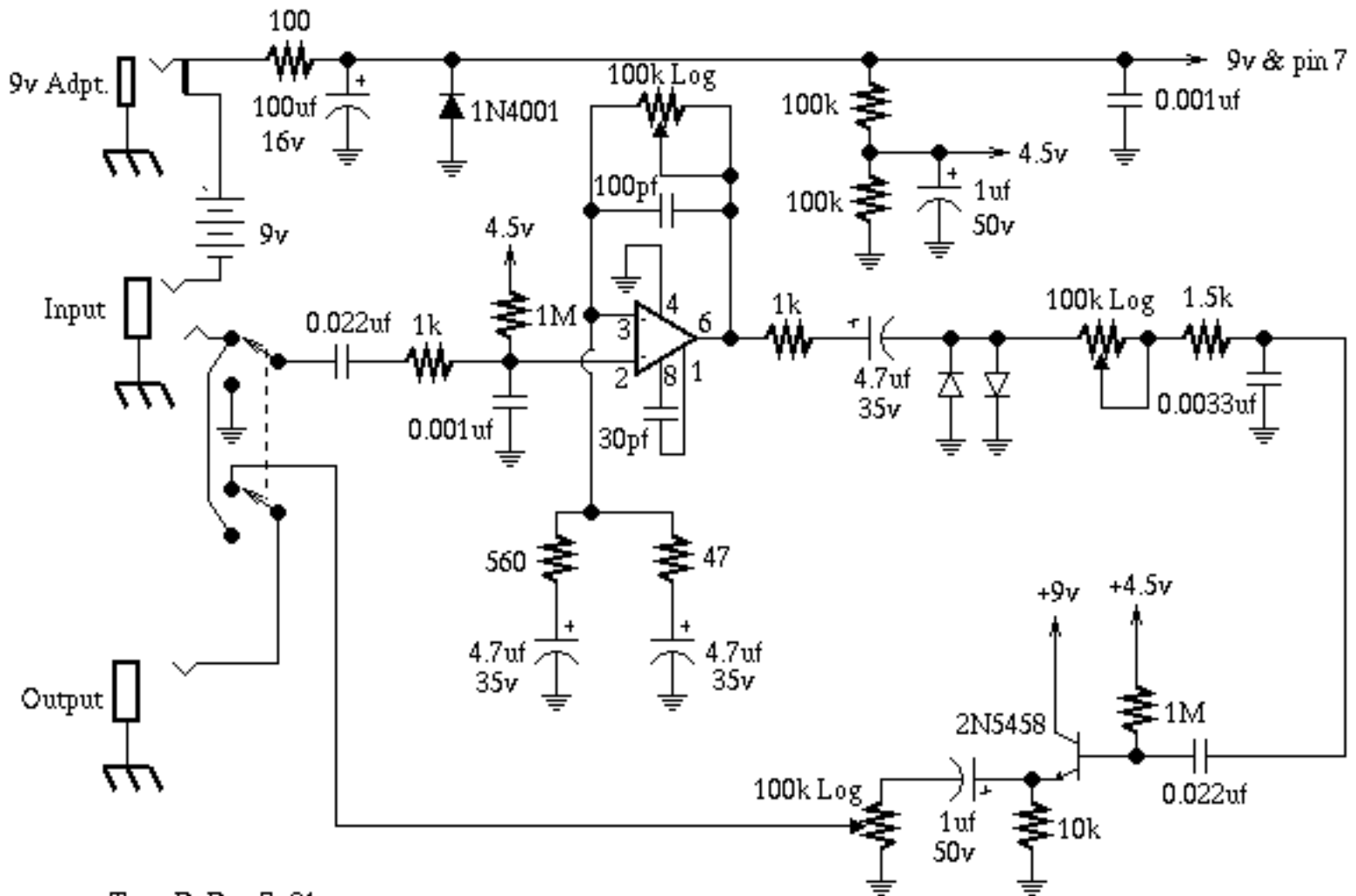
ProCo Rat Distortion



IC = LM308

Diodes = 1N4148

ProCo Rat Distortion



Type B Rev 7-81

IC = LM308

Diodes = 1N4148

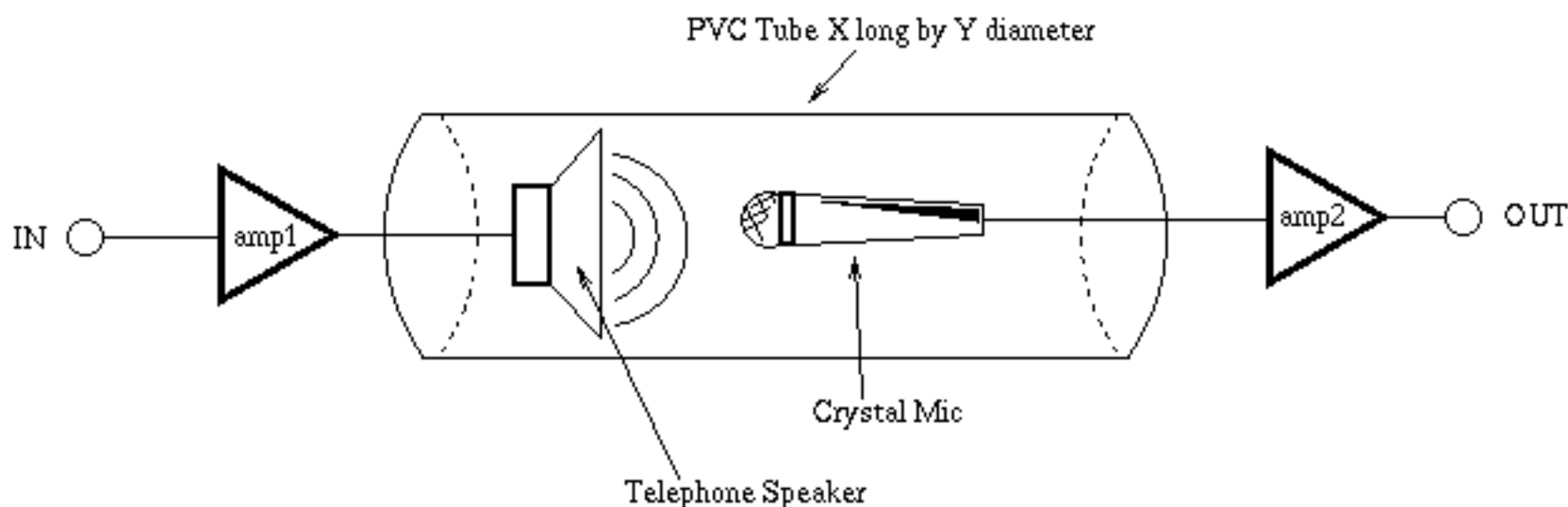
Current Drain @ 9v

~ .6ma, no Input (idle)

~ 1.6ma, full output

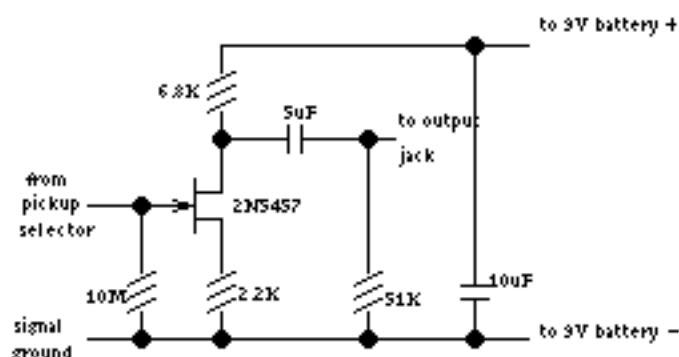
THE

PIPE BOMB



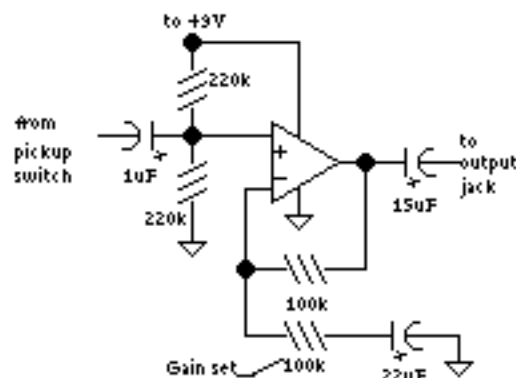
My dimensions for my prototype are $X = 36\text{cm}$, $Y = 5.5\text{cm}$. This imparted a pretty high pitch tone but I like it. The X and Y dimensions should be played with to create the exact tone your looking for, also I chose a telephone speaker and a crystal mic so I got the funkiest tone I could think of. A dynamic mic would limit the trebel somewhat probably make it sound less harsh. I'd be interested in any mods made to this design (ie. stories, ideas, etc.) so feel free to email me. The amps can be any old simple op-amp configuration that can drive a speaker or take a mic input. I just used some surplus stuff I had lying around to make mine. The end product had all the circuitry inside the tube and the battery on the outside, with one control for the gain of the speaker (mic was at fixed gain). Note, if you place this infront of your amp and turn every thing up, without adding any dampening to the tube it will feedback like you wont believe! You will probably wish to avoid this as it tends to hurt your ears. I put a bit of foam rubber in one end of the tube and an old sock in the other to dampen feedback. I like to leave my options open though, so I also didn't make this a permanent addition. My prototype is basically a fuzz, as my guitar will overload the speaker quite easily and the tube just adds a bit of strange overtone and what I swear is the tiniest hint of reverb. Sounds great though! Clean tones through a similar set up would sound good too, but I haven't built one of those yet. Perhaps a larger speaker (4-5") and an old carpet tube would add better characteristics for clean tones. Try changing the tube material also for a different tone, I almost used a bit of gutter piping when I first built this, now I wonder what it would've sounded like.

On Board Guitar Preamps

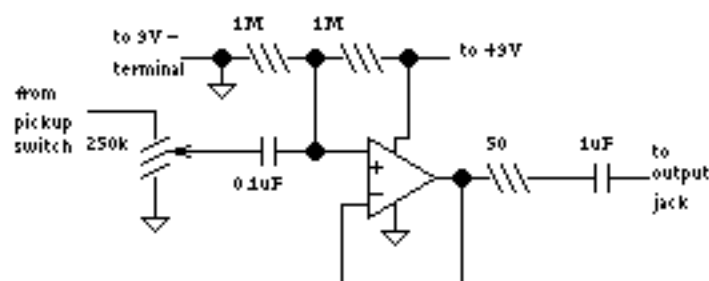


For people who don't like op amps, here is a discrete JFET preamp design. It has low distortion, low noise, low feedback, overloads gracefully, is small, etc., etc. Overall gain is 3db (2X) or so. It uses about 1/2 ma, so a 9V battery will last a long time. You can add a high boost switch if you like by having it shunt the 2.2k resistor with a 0.05uF cap (or other value; smaller cap = boosts only higher frequencies, and the reverse). You can just put in a 10uF cap across the 2.2k resistor to up the gain.

Circuit by Don Tillman. don@till.com



A preamp from a TL071 op amp. The gain set resistor lets you customize the gain. As shown, it is 2. Lowering the Gain Set resistor lets you raise the gain. You get distortion at high gains.

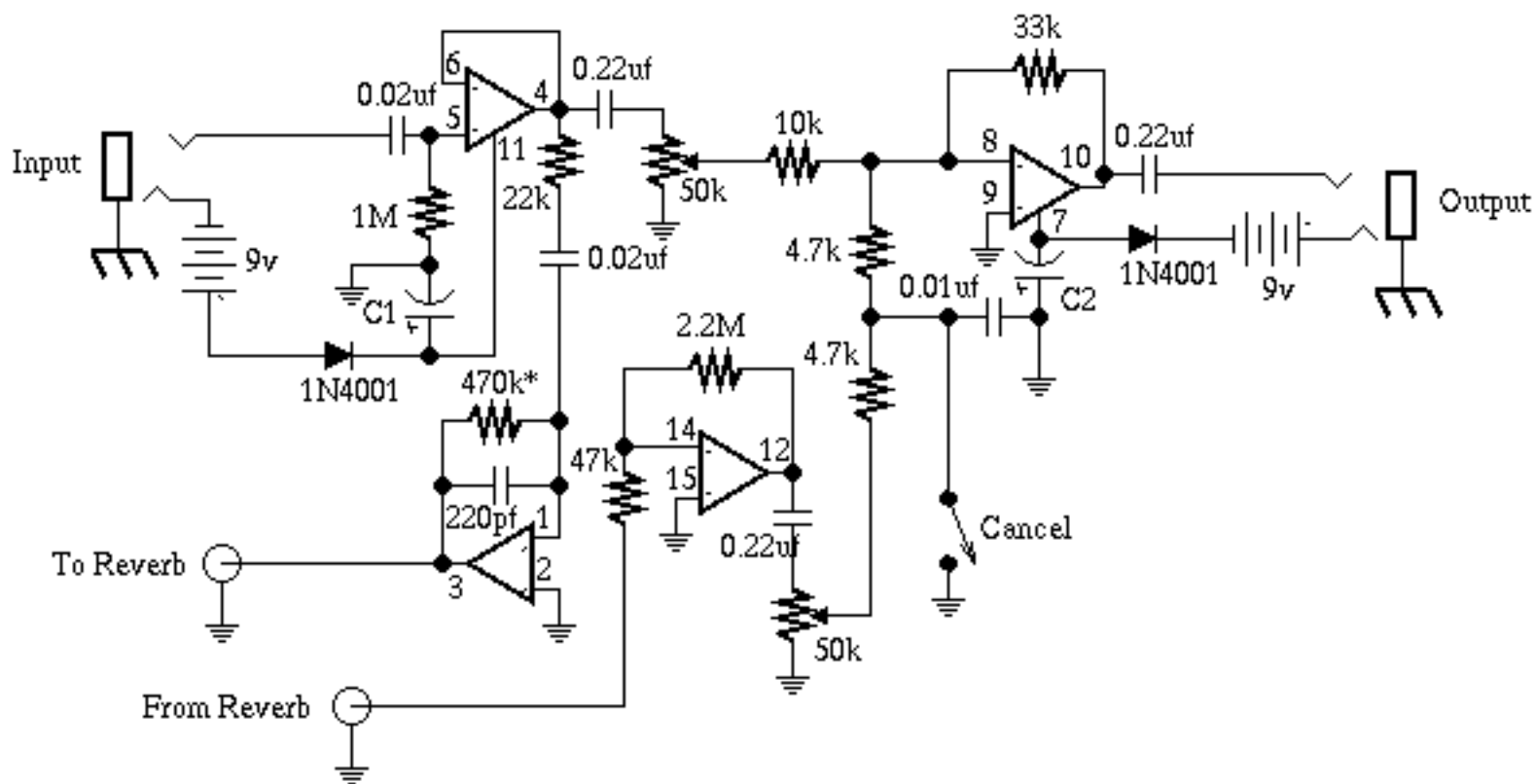


The opamp is a LT1012 micro power opamp, could be other low noise low power op amp. Use a stereo jack on the guitar to turn power on when a cable is plugged in. The circuit produces no noticeable noise or distortion and a 9 volt battery lasts a couple of years. This is intended to buffer the guitar pickups and controls from the cable capacitance. It is possible to add gain to this circuit by modifying the feedback loop on the op amp.

Circuit by Mike McTigue.

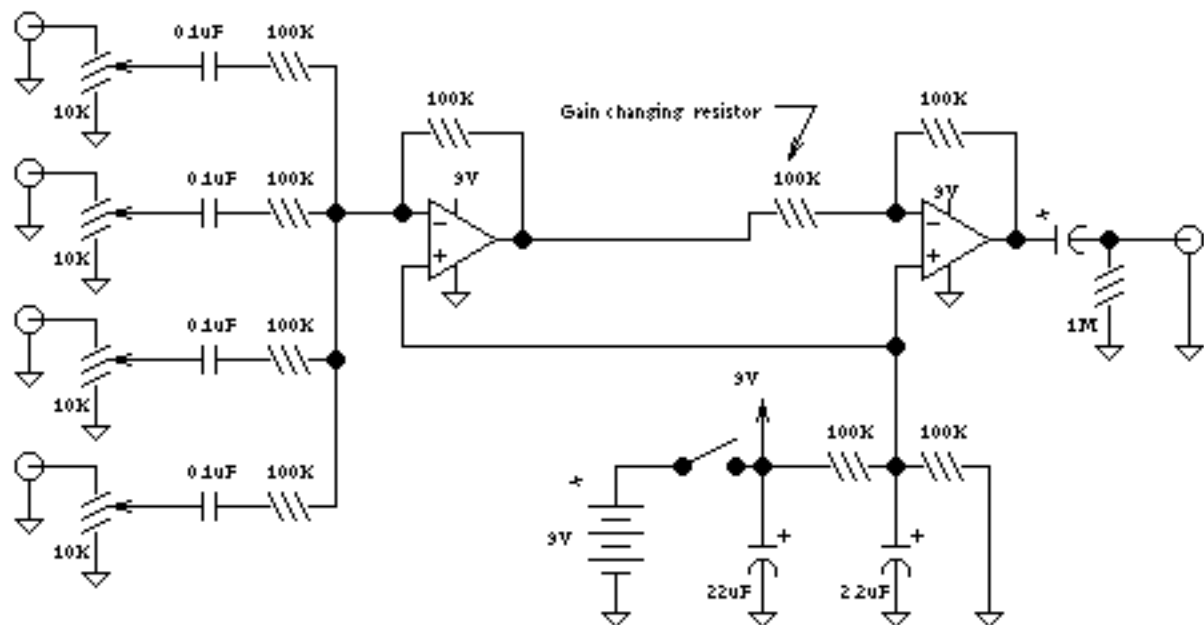
Stage Center Reverb Unit

from Guitar Player 1976 by Craig Anderton



This simple spring reverb can be built cheaply and requires a minimal amount of space for the circuit it self. The op-amp is a quad type, the pinout for a 4136 is shown, but others may be substituted. The bypass caps C1 and C2 can be from 10 to 100 uf. The resistor marked with a * may need to be lessened if you experience distortion in your reverb, lower this to achive maximum signal with no distortion. Many spring reverb units may be used with this circuit, the original article suggested an accutronics model. Many reverb units also use RCA style jacks for in's and out's, be prepared for this. The cancel switch will shut off the reverb effect without any clicks or pops. All resistors are 1/4 or 1/2 watt, 5% tolerance, and all caps are rated at 10 or more volts.

Simple Mixer

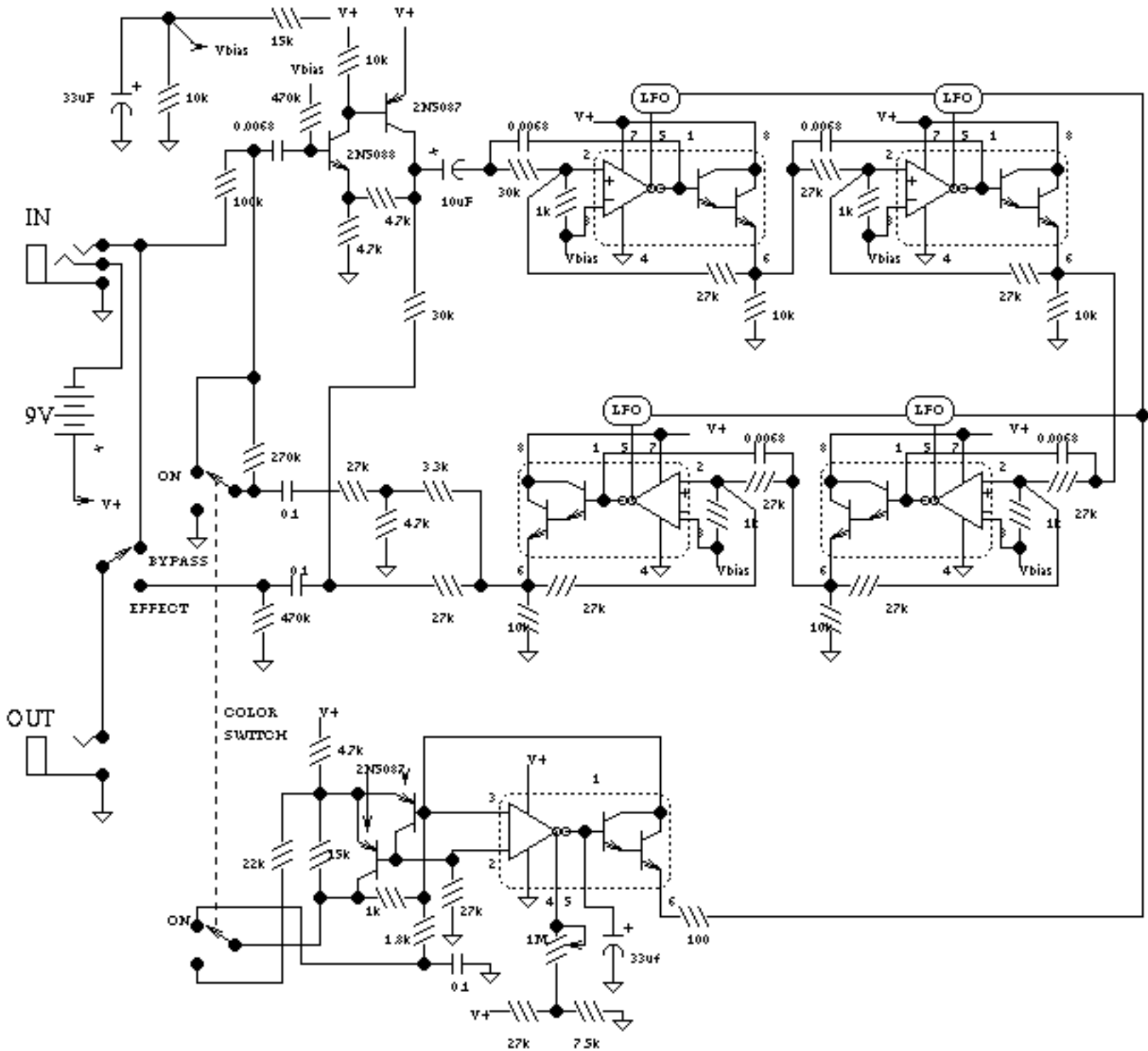


A simple mixer suitable for mixing microphones or effects outputs. The overall gain from input to output is one if the pot corresponding to the input is full up. You can make this a net gain of ten (or any other reasonable gain) by reducing the input resistor to the second op amp. 10K in this position gives a gain of ten, or 20db. If you are mixing effects outputs which have an output level control built into them, you can dispense with the input level controls, or make some have level controls, some not. Audio taper pots are probably better, but linear will work.

For the opamps, choose a jfet input dual or singles, like from the National Semi LF3xx series, or something like the TL072 or TL082.

EH Small Stone Phaser

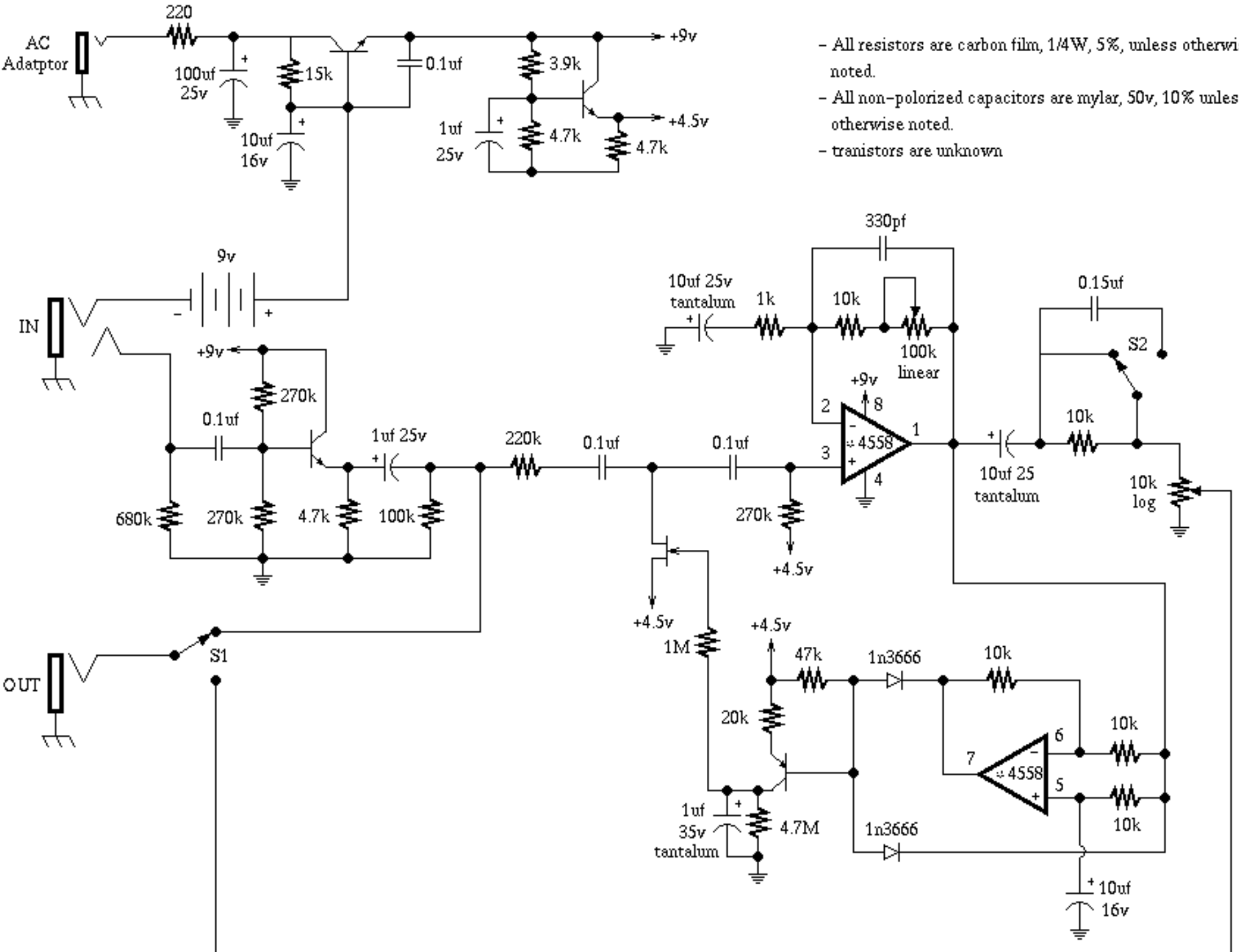
Issue J



The Small Stone is somewhat unique in using Operational Transconductance Amplifiers (OTA's) for phase shift stages instead of opamps with variable resistors. All of the IC's are house marked EH1048, but can be replaced with CA3094 which is a combination of an OTA equal to the CA3080 and a darlington emitter follower. Later Small Stones used slightly different circuits, but all used the OTA.

Electro Harmonix Soul Preacher

- All resistors are carbon film, 1/4W, 5%, unless otherwise noted.
- All non-polarized capacitors are mylar, 50v, 10% unless otherwise noted.
- transistors are unknown



OUT

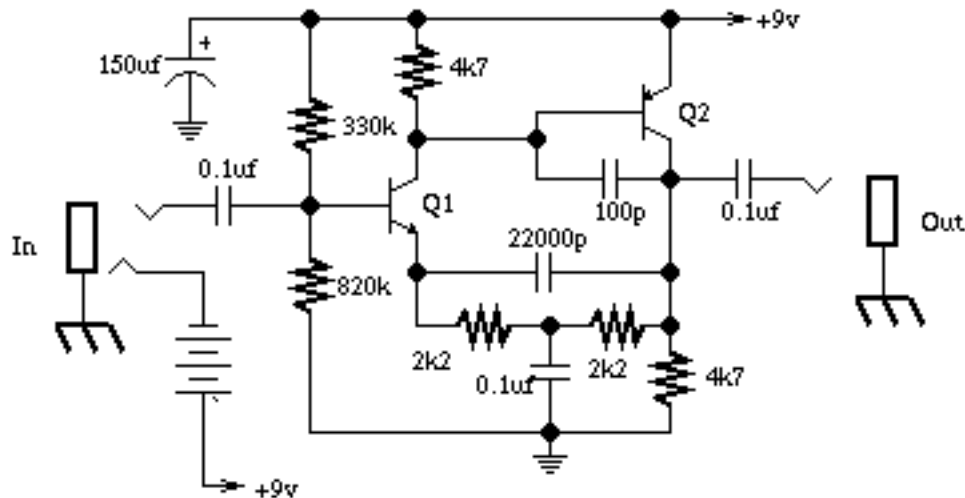
IN

AC Adaptor

Tone Booster

from *Everyday Electronics* Sept. 1978

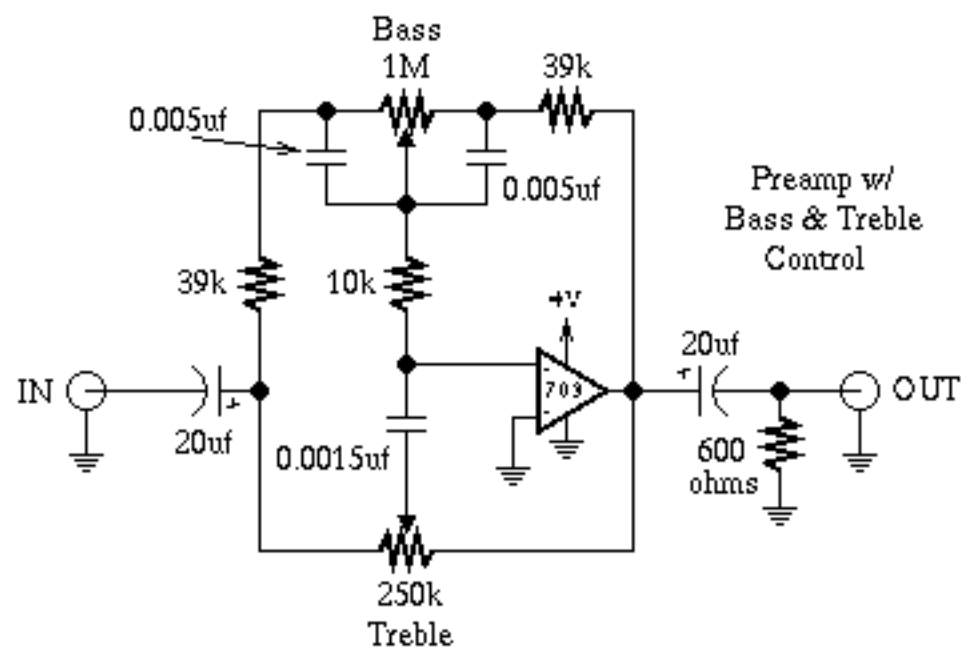
peaks frequencies at 5000 Hz for a "cleaner and more penetrating" sound



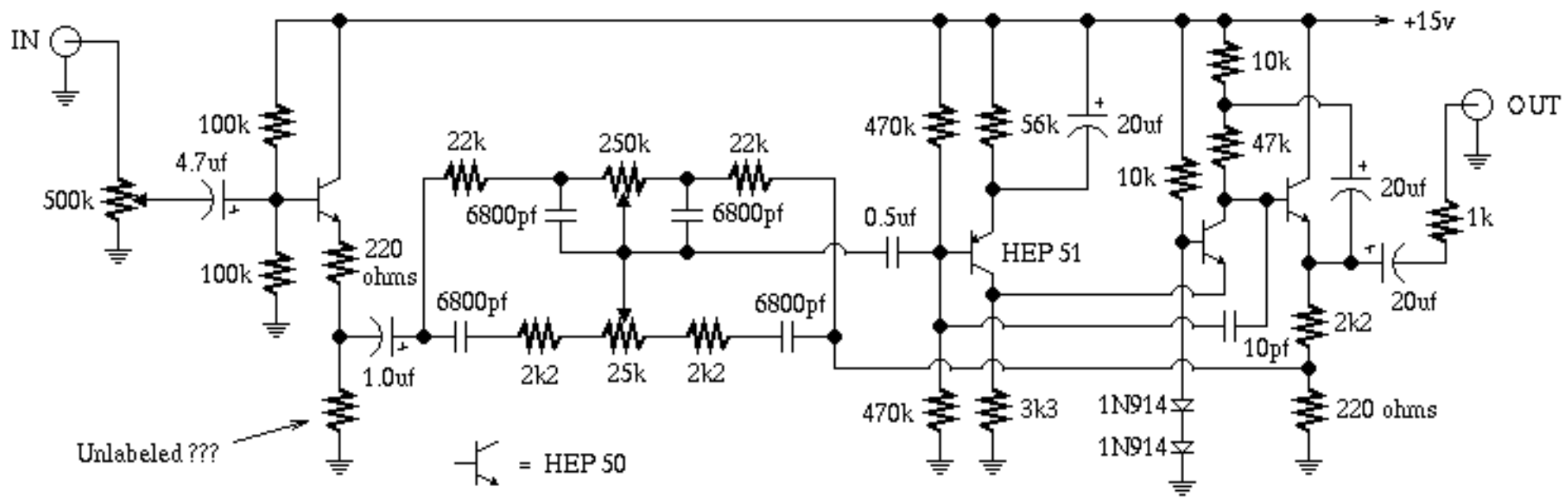
Q1 - ztx384

Q2 - BC415p

Tone Control Circuits

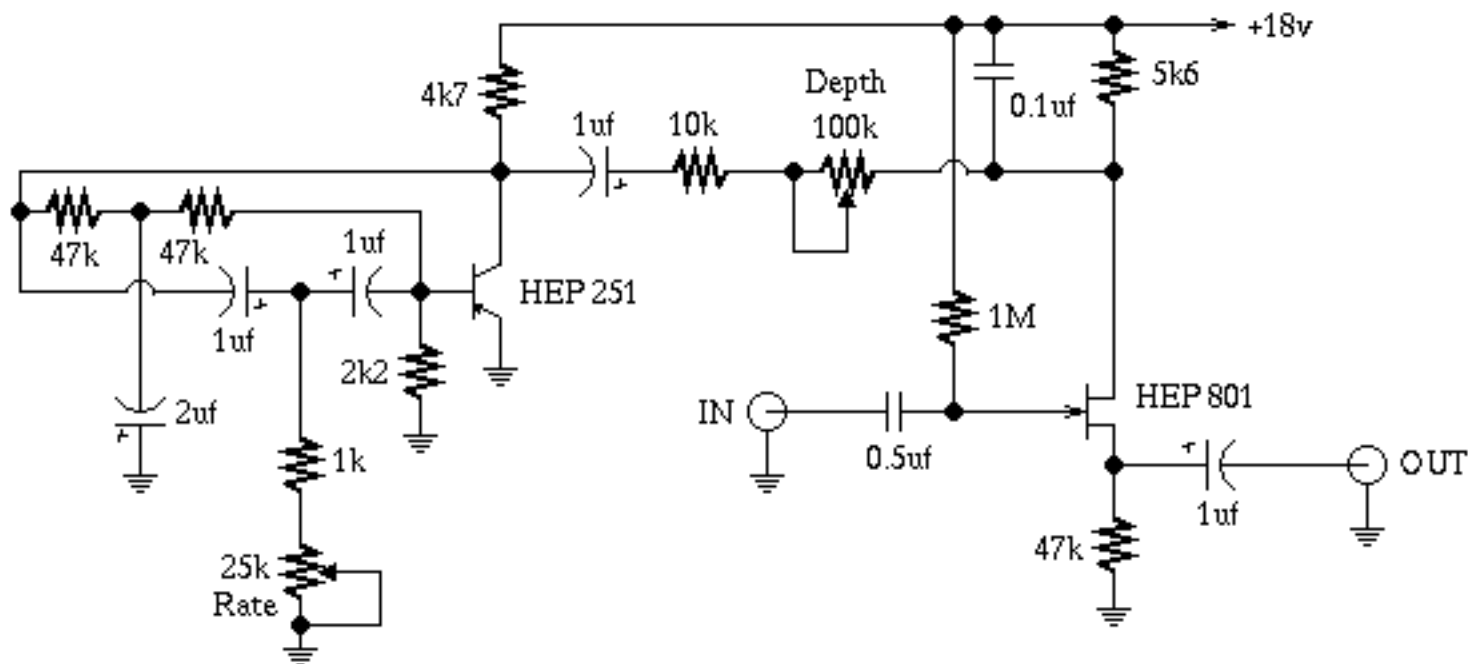


Both of these circuits provide some additional control over tone. They were originally intended for use with synth modules but could be easily incorporated into most any effects circuit.



Tone Control circuit with signal isolation and impedance-matching stages.

Controllable Tremolo Circuit



This tremolo circuit is not a "plug and play" ready guitar effect, however it could be converted to one with relative ease. It just needs some buffering on the input and output and perhaps some bypass switching.

Tube Distortion

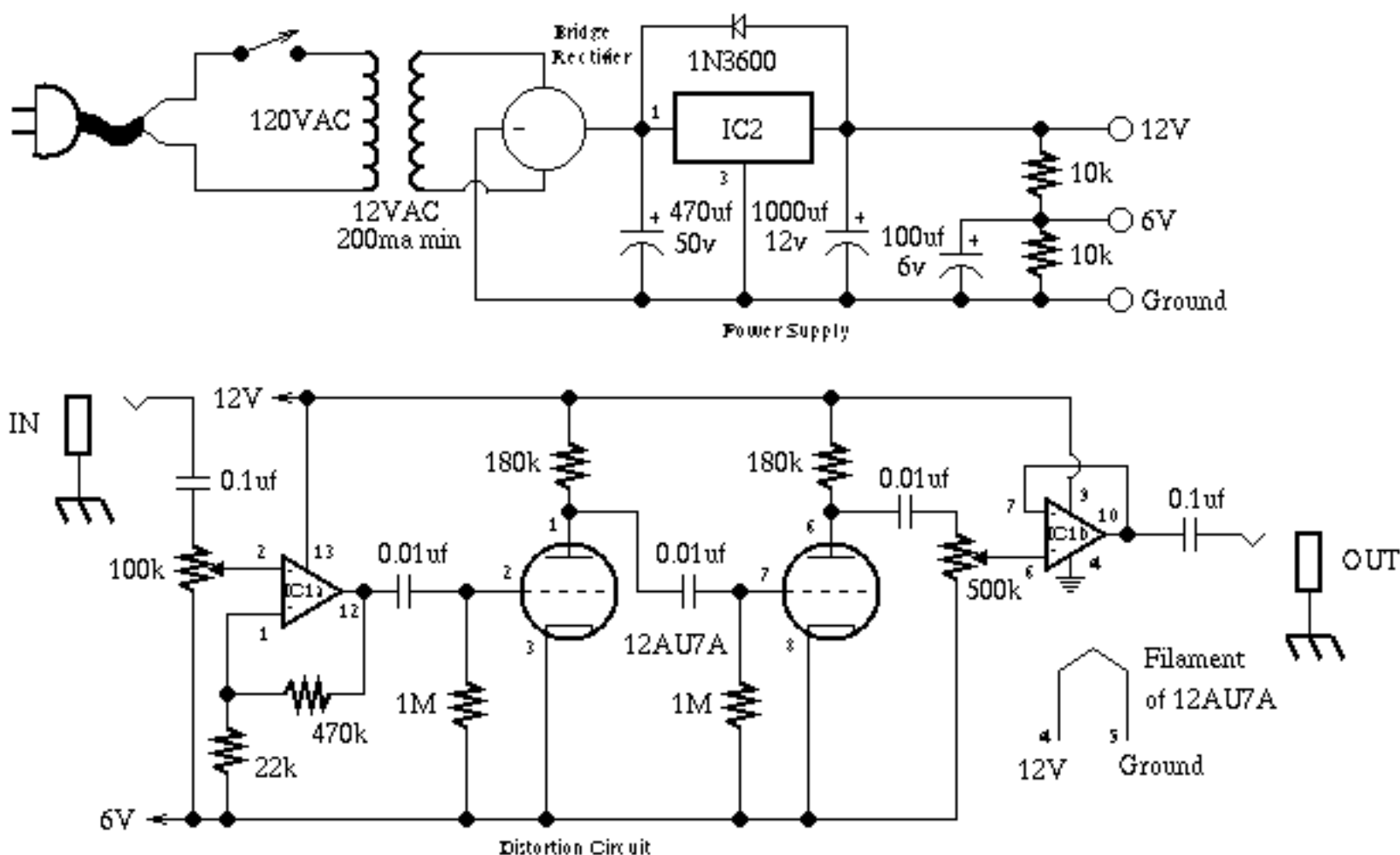
by Ron Black Circuit from Guitar Player : October 1981

IC1 - 747 dual op-amp, others may be substituted but pinout will differ

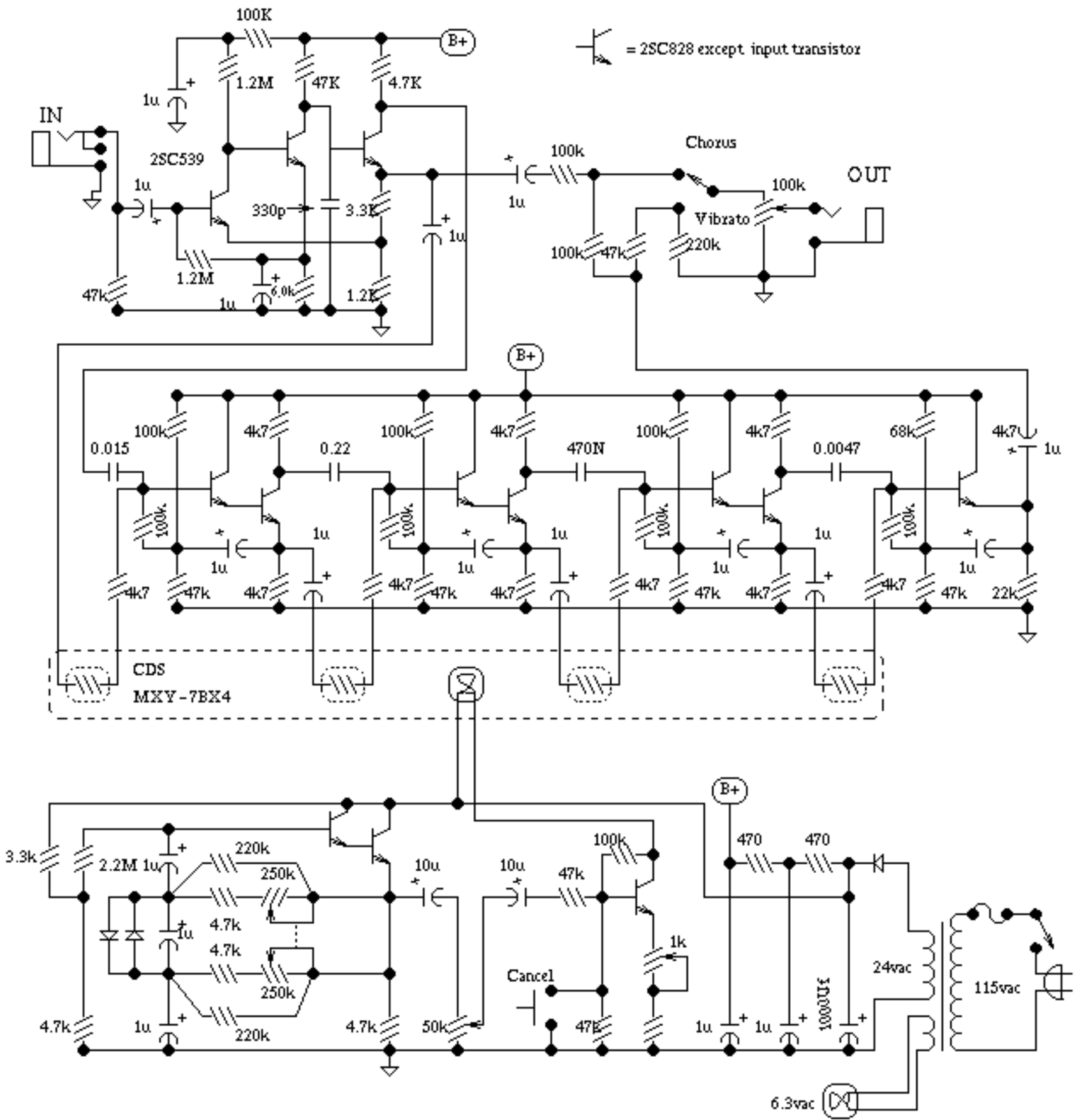
IC2 - LM340K-12 Voltage Regulator

Bridge Rectifier - Full wave bridge recitifier, 50 Volts, 500 ma minimum

All resistors 1/2 W, 10% preferred

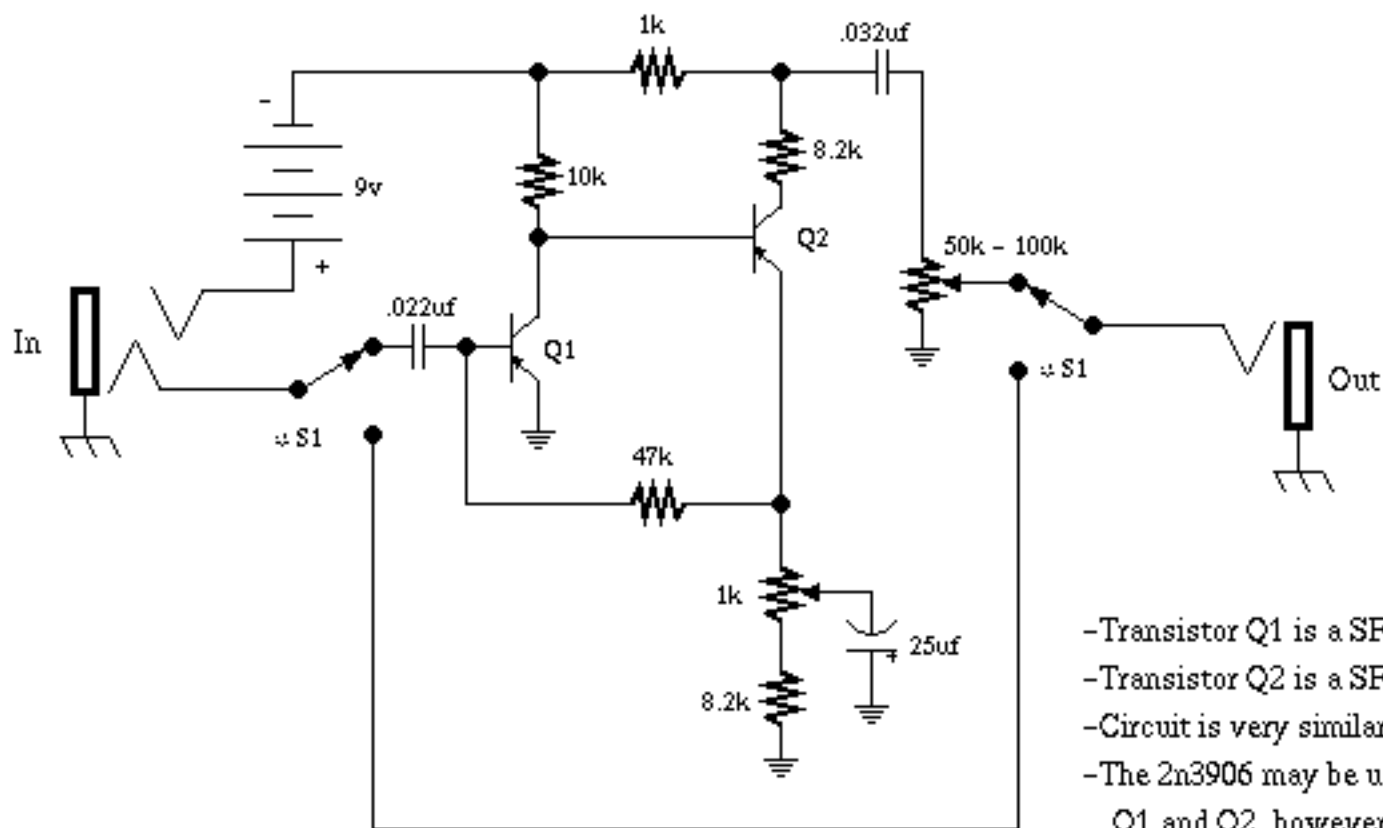


UniVibe



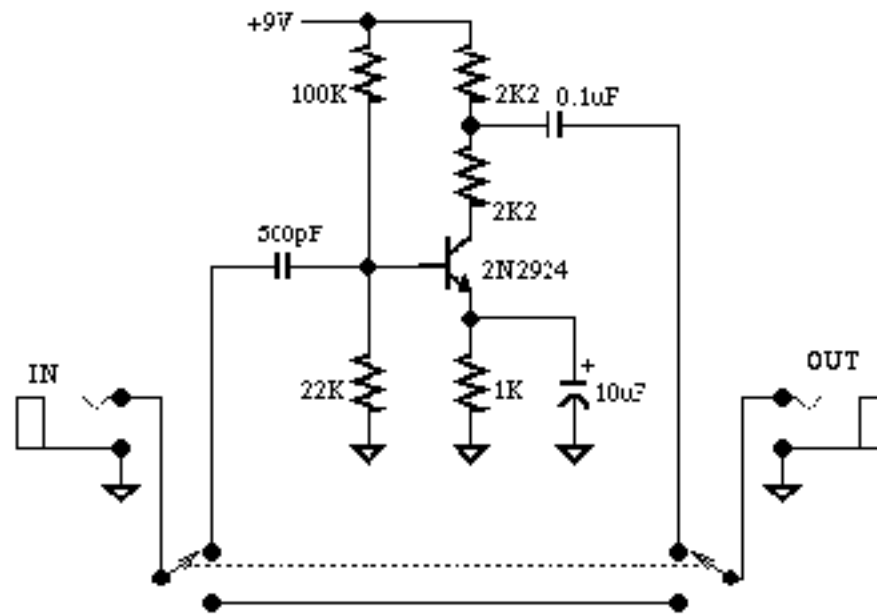
The UniVibe is famous from Jimi's use of it. This schematic is known to be incorrect, as the low frequency oscillator section will not work as shown. The LFO is probably a phase shift oscillator, with the dual 250K pots in the pedal assembly to control speed. A modern version would substitute an LED/photocell optocoupler for the four LDR's and the incandescent light bulb that makes the phase shifting work. This IS just a four stage phaser, perhaps with some distortion from the signal path thrown in.

Vox Tone Bender

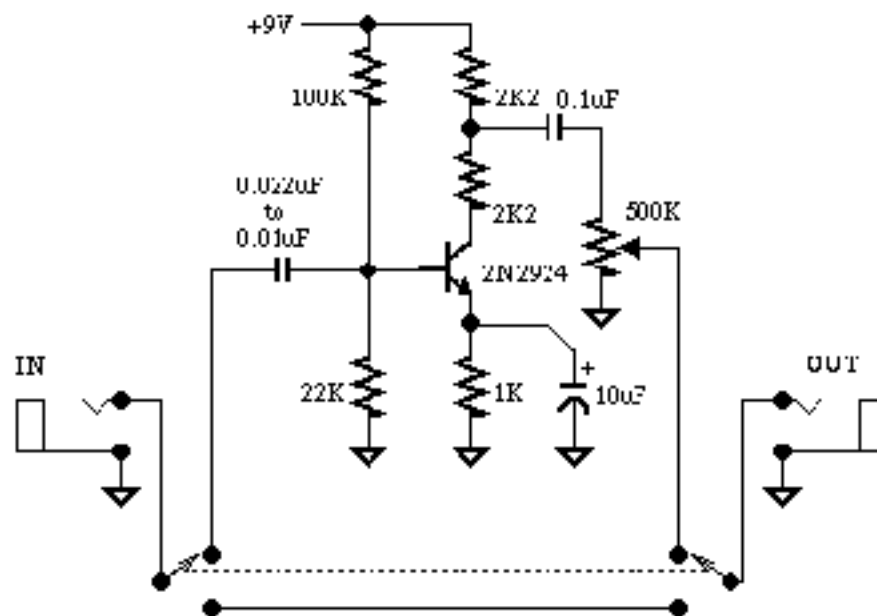


- Transistor Q1 is a SFT 363
- Transistor Q2 is a SFT 337
- Circuit is very similar to "Fuzz Face"
- The 2n3906 may be used as a replacement for Q1 and Q2, however originals were probably germanium.

VOX Treble Booster



Original Circuit



Modified to be used as an overdrive/distortion unit

The input cap is changed from 500pF to 0.01 uF (1000pF) or 0.022 uF (2200 pF) to allow more bass in. This usually overloads the booster and causes crunchy distortion.