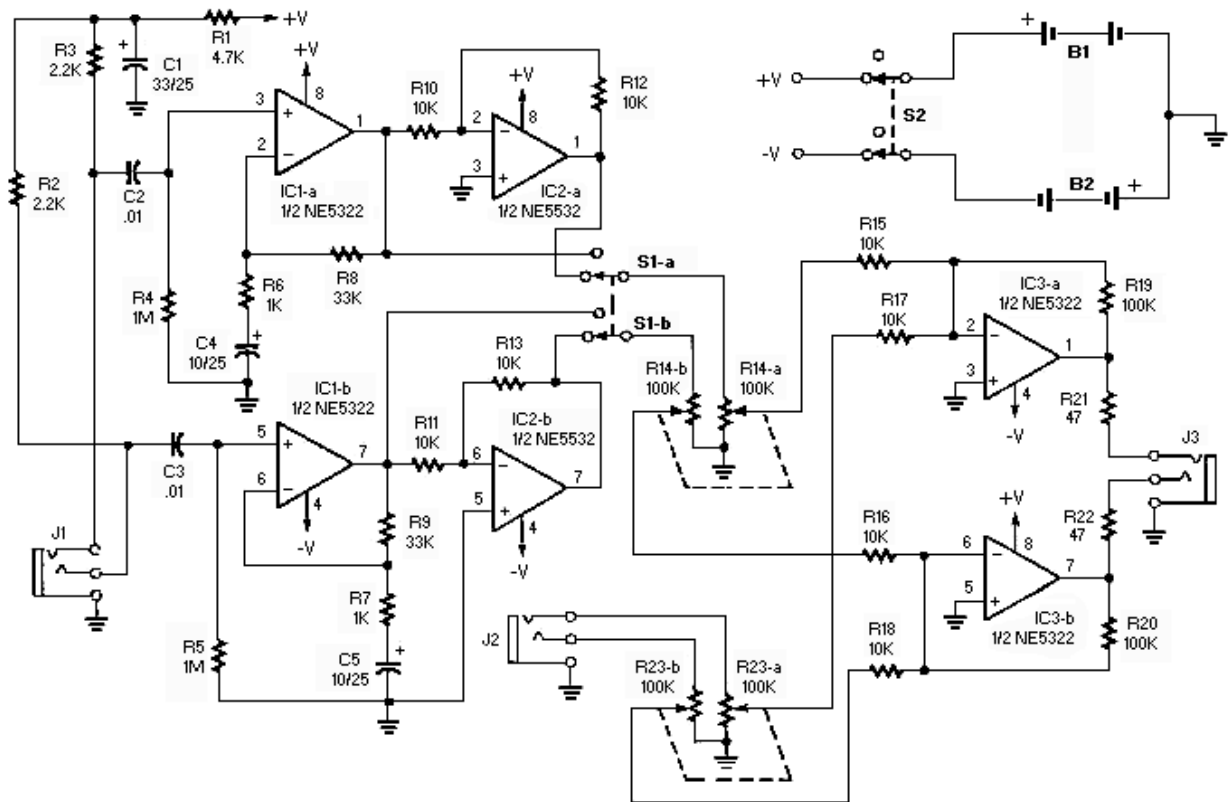


# Dark Bark Cancellation

To better understand the mechanics behind noise cancellation our group first choose to build a set of noise canceling headphones. We choose to start there as it would be easier than canceling out a noise outside where sound waves could bounce of various objects making cancellation difficult. The design we are using is from Headwize project Library.

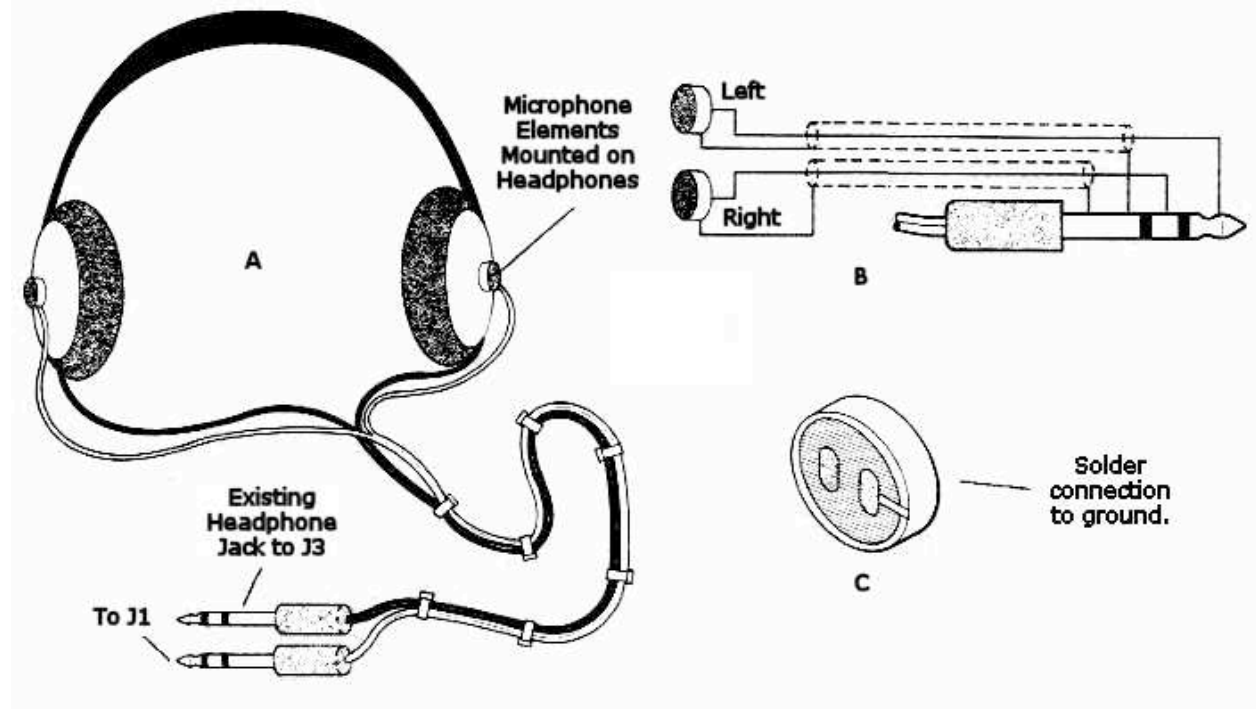
**Design:** The electronics consist of three op-amp circuits; each built around one half of an NE5532 dual op-amp. Each circuit uses that op-amp in a different configuration. The first circuit is a non-inverting pre-amp, the second is a unity-gain phase-inverter, and the third is an inverting headphone amplifier. Since the Noise-Canceling Headphones is a stereo device, the circuit is actually two identical circuits side-by-side.

## Schematic:



## Description:

Microphones are attached to the outside of your headphones to pick up unwanted back round noise. That signal then enters the schematic at J1 and is amplified and inverted. J2 is the auxiliary input from your desired audio device. That signal gets added to the noise canceling signal and gets amplified. The final signal is at J3 which is where you will hook up your headphones.



## Parts list.

### Resistors (1/4W, 1% metal film):

- R1 - 4.7Kohm
- R2, R3 - 2.2Kohm
- R4, R5 - 1M
- R6, R7 - 1Kohm
- R8, R9 - 33Kohm
- R10-13, R15-18 - 10Kohm
- R14, R23 - 100Kohm pot, dual-gang, linear taper
- R19, R20 - 100Kohm
- R21, R22 - 47 ohm

### Additional Parts and Materials:

- IC1-3 - NE5532 dual audio op-amp
- C1 - 33uF, 25WVDC, electrolytic capacitor
- C2, C3 - 0.01uF Mylar capacitor
- C4, C5 - 10uF, 25 WVDC, electrolytic capacitor
- J1-3 - Audio jacks, 1/8-inch, stereo
- S1, S2 - Dpdt toggle switch
- B1, B2 - Battery, 9 volt
- Microphones (Digik-Key P9967-ND or similar), headphones, PC board, case, wire, hardware, etc.

