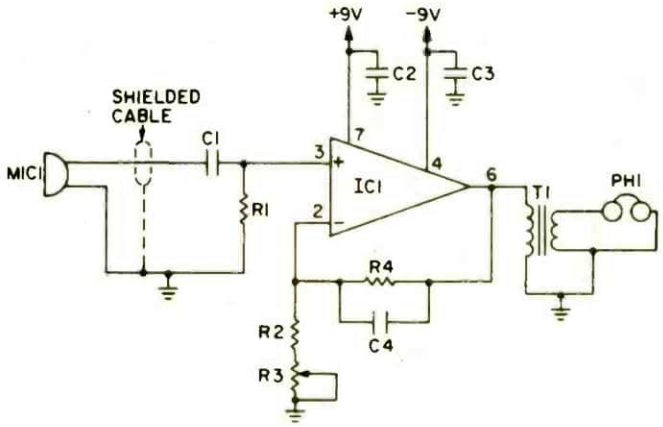
57 Super Stethoscope

☐ Ausculation is the medical term for the procedure. In simple language, it means having your ribs ticked with an icy cold stethoscope. Should you ever get the urge to play doctor, we prescribe the simple electronic stethoscope diagrammed here. Best resutls will be obtained using hi-fi or communications-type low-impedance headphones designed to isolate the listener from ambient sounds. Be sure to connect the microphone cartridge to the rest of the circuit using shielded audio cable to keep noise pickup to a minimum. Potentiometer R3 adjusts the gain. Use a socket when mounting IC1 since it has delicate FET inputs.

PARTS LIST FOR SUPER STETHOSCOPE

C1—0.01-uF mylar capacitor, 35 VDC
C2, C3—0.1-uF ceramic disc capacitor, 35 VDC
C4—10-pF polystyrene capacitor, 35 VDC
IC1—RCA CA3140 op amp
MIC1—crystal microphone cartridge
PH1—low-impedance headphones, hi-fi or communications type
R1, R4—1-Megohm, ½-watt resistor, 10%
R2—1000-ohm, ½-watt resistor, 10%
R3—10,000-ohm linear-taper potentiometer
T1—miniature audio output transformer—1,00-ohm primary/8-ohm secondary



58 Op Amp Variation

☐ Op amps, like the popular 741, are usually operated with matching plus and minus power supplies. However, for simple signal amplification applications, the single positive supply shown below has been found to work quite nicely. Resistors R3 and R4 may be fixed at about 5000 ohms each, or replaced with a 5K or 10K potentiometer, if it is desired to adjust the no-signal output level so that high-amplitude signals will not be clipped. Sometimes, intentional clipping is desired, so this feature may be retained for general experimental applications. Note: If a potentiometer is used for R3, R4, connect center terminals of pots to pin #3 of IC1.

PARTS LIST FOR OP AMP VARIATION

C1—0.01-uF ceramic capacitor, 15 VDC (gain=10)
—0.10-uF ceramic capacitor, 15 VDC (gain=100)
C2—1 to 100-uF electrolytic capacitor, 15 VDC (increase value with frequency)
C3—100-uF electrolytic capacitor, 15 VDC
IC1—741 op amp
R1—10,000-ohm, ½-watt resistor
R2—100,000-ohm, ½-watt resistor (gain=10)
—1,000,000-ohm, ½-watt resistor (gain=100)
R3, R4—5,000-ohm, ½-watt resistor or 5,000-10,000 ohm linear taper potentiometer