Super Bass Excavator

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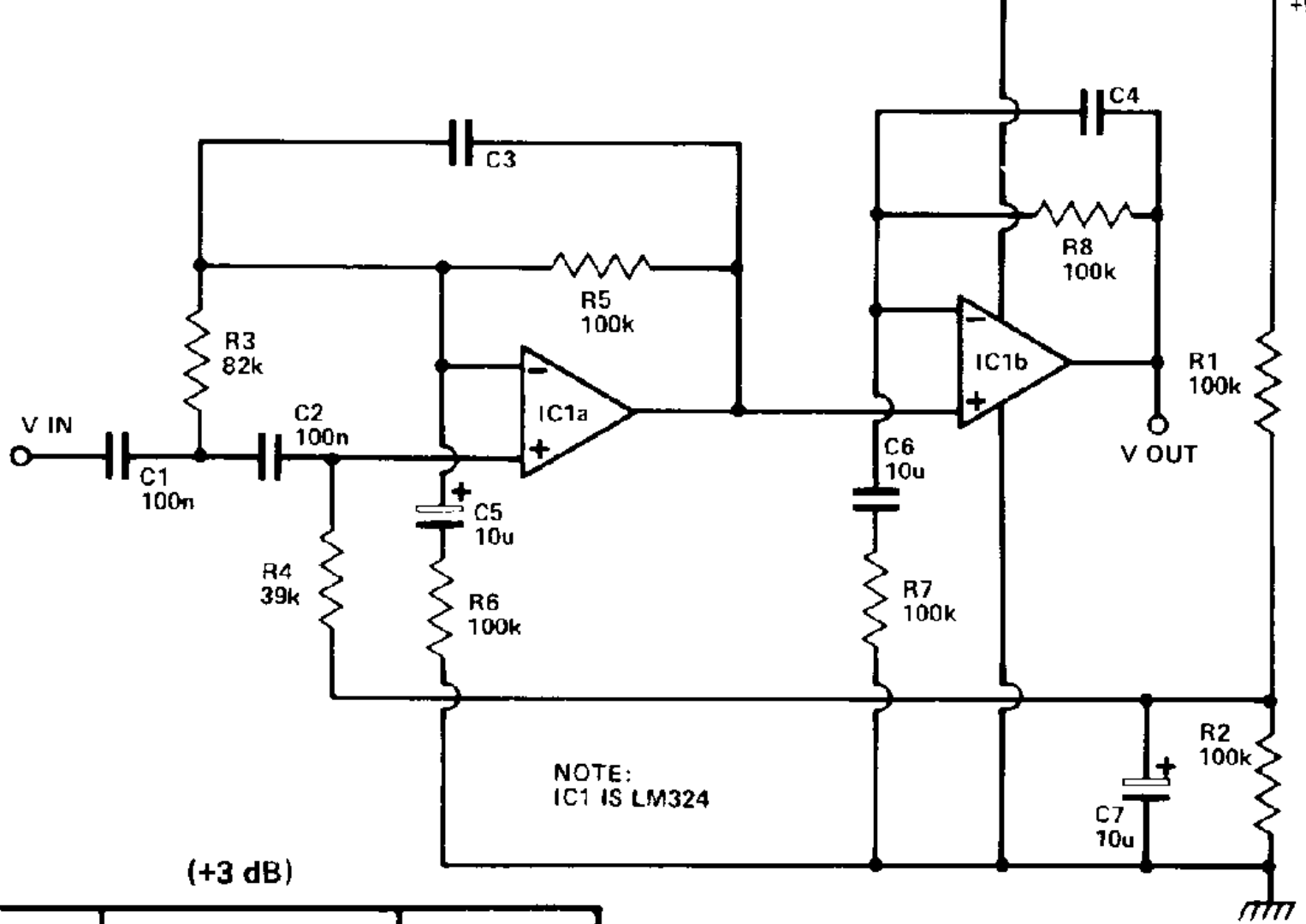
The main problem with small infinite baffle speaker systems is that the bass response rolls off rather sooner than their larger brothers, This circuit overcomes this problem by boosting the deep bass response of the power amp driving the speakers. Certainly this is not an altogether new idea as regular readers of this magazine well know but this particular circuit does the job rather better than most and the audible improvement is well worth the time and money spent.

The circuit is based around the well known quad op amp LM324. This device contains four independent op amps of the 741 type. Before any purists hold up their hands in horror it should be noted that these are capable of delivering 2 V RMS of 20 kHz sine wave without slew rate problems and that is more than enough to drive 99.99% of all known power amps into clipping.

In order to overcome the crossover distortion problems of these op amps the output stage of each is biased into class A by R7 and R10. Cl, C2, R3 and R6 form a Butterworth second order filter which removes any signals below 20 Hz thus preventing amplifier overload from record warp signals. R5 and C2 in conjunction with R8 and C4 produce a shelf in the circuit's response below the frequency determined by the reactance of the capacitors.

Now it so happens that the rate of roll · off of infinite baffle enclosure is 12dB per octave and the slope of the filters is the same. Thus, by the simple expedient of choosing the capacitor values to be equal in value and by matching the quoted -3 dB point of the speakers with the +3 dB values in the table one extends the lower -3 dB limit of the speakers by half an octave.

The device must be inserted between the pre and power amplifiers and has a unity gain except in the bass. The maximum gain has been set at 6 dB to prevent amplifier overload.



(+3 dB)

NEW CUTOFF –3 dB POINT	OLD CUTOFF –3 dB POINT	C3,C4
38 Hz	50 Hz	47 nF
45 Hz	60 Hz	39 nF
52 Hz	70 Hz	33 nF
60 Hz	80 Hz	27 nF
68 Hz	90 Hz	22 nF
75 Hz	100 Hz	18 nF