

SHORT CIRCUITS

STEREO SIMULATOR

Make more of mono with this ETI project team design



IF YOU ARE a member of that illustrious band — the hi-fi enthusiast — read no further. The suggestions contained below are not for your eyes.

If, however, you are a normal human being who wants to get as much fun out of life as possible, read on.

The stereo simulator is designed to take a mono signal, from a mono cassette recorder or, via an isolator please, your TV set, and turn it into a pseudo stereo signal.

It does this by splitting the input into two signal paths and then filtering each signal. The high frequencies are fed to the left input of your stereo amplifier and the low frequencies to the right hand channel.

While this may not sound too exciting, we here at ETI were amazed at the extra *something* this circuit added to many different types of music.

Now they say that one picture is worth a thousand words (hence all the lovely pictures in ETI) and we are sure that somewhere, someone, sometime has said the same sort of thing about sound (no not a picture, silly), so if you want to appreciate the effect of our stereo simulator, please build it and try it. We think you will be amazed too.

Picking Up The Pieces

The circuit should be assembled according to our component overlay.

Make sure the quad op-amp is correctly positioned before soldering. The input lead from SK1 was earthed at both ends but the leads to SK2 and SK3 should only be earthed at the socket end (to prevent earth loops). Current consumption should be about 2.5mA per battery. The power supply switch, SW1, was a double pole switch to switch both supply batteries, the common of the batteries being 0V.

HOW IT WORKS

The circuit is based on two second order filters built around IC1(b) and IC1(d).

IC1(b) is a low pass filter with component values chosen to give a break point of about 2kHz. IC1(d) is a high pass filter with, again, a break point of 2kHz.

Thus the output at SK2 will consist of the low frequency portion of the input (bass) and SK3's output will consist of the high (treble) portion of the input signal.

The mono input from SK1 is fed via unity gain input buffers to each filter element. This is to avoid loading the filters which might degrade their performance.

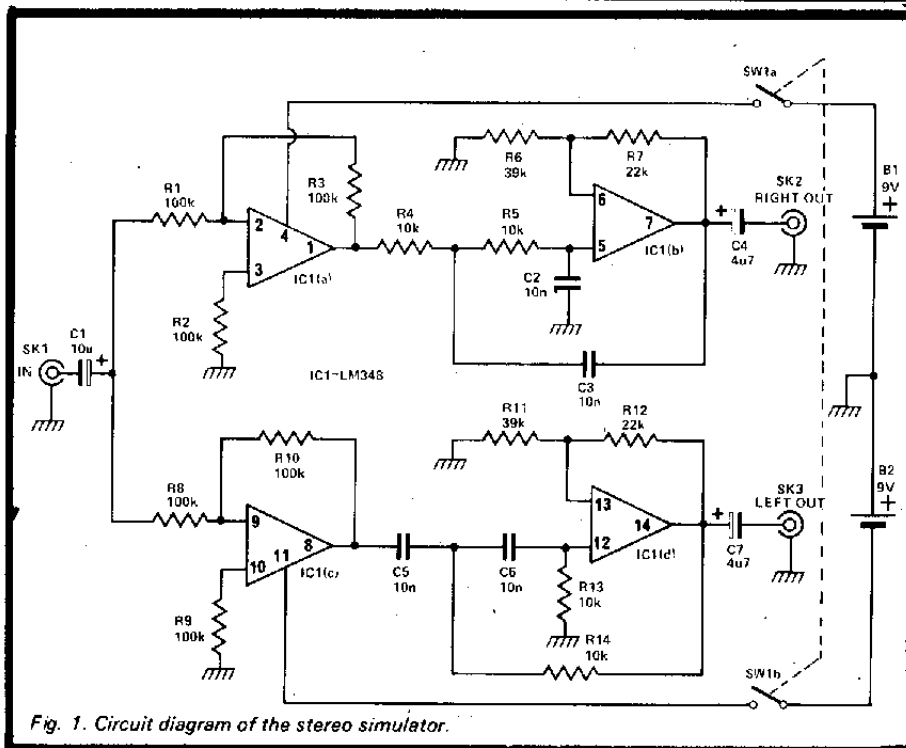
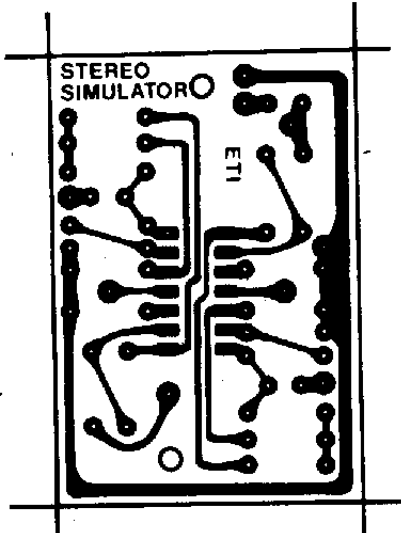
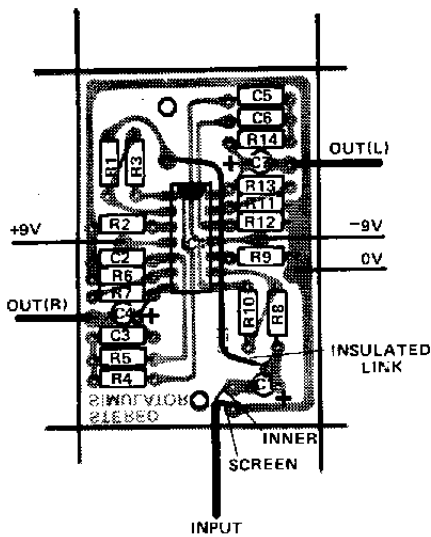


Fig. 1. Circuit diagram of the stereo simulator.



Shown full size (60x40mm) above is the foil pattern for the stereo simulator. To the left is the component overlay.

PARTS LIST

RESISTORS (all 1/4 W 5%)

R1,2,3,8,9,10	100k
R4,5,13,14	10k
R6,11	39k
R7,12	22k

SEMICONDUCTOR

IC1	LM348 quad 741 op amp
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CAPACITORS

C1	10u 16V electrolytic
C2,3,5,6	10n polyester
C4,7	4u7 2V electrolytic

SOCKETS

1SK1,2,3	Panel mounting phono sockets
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SWITCH

SW1	Double pole on-off, slide or toggle
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CASE

Norman: Type AB9

MISCELLANEOUS

P.C. Board as pattern, nuts bolts, spacers etc. single screened wire, flex Two 9V batteries and clips

BUY LINES

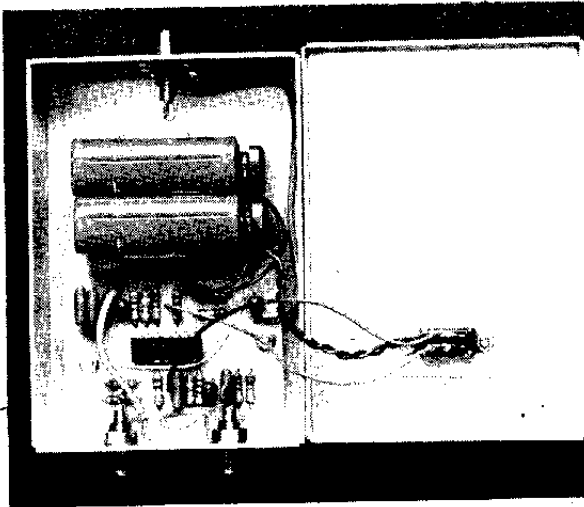
The only component that may be difficult to obtain is the LM 348. This device is however available from Marshalls at 40-42 Cricklewood Broadway London N.W.2 at £1.62.

The cost of constructing the project is about £4.50.

Playing The Part

Connect up the stereo simulator to your stereo amp and to a mono signal source. The effect of the circuit can be modified by use of the amplifiers tone controls (giving a sort of width control) and the balance control. Have fun.

Fig. 2. Interior view of the stereo simulator showing the compact layout obtained when using the LM348 quad op-amp.



USE LM837.