009 DISCOMIXER

This mixer is a typical example of the way modern components can, and do, simplify the realization of good quality audio circuits. In the given configuration it is eminently suitable for use as a discomixer, but the number of input channels can easily be enlarged.

As can be seen in figure 1, in its basic form the mixer has four input channels. These could, for instance, serve as inputs for a microphone, stereo pick-up, and cassette player or tape recorder.

The power supply has been kept as simple as possible; if it proves difficult to obtain the XR4195 regulator IC, it may be replaced by a combination of a 78L15 and 79L15. The transformer is preferably of the PCB type to keep the mixer as compact as possible.

The values of C_1 and R_1 are dependent on the type of microphone used. If this is a high-impedance type, the values should be 470 nF and 22 kΩ respectively, whereas with low-impedance types, 10 μF and 680 Ω are required.

Unfortunately, miniature bipolar electrolytic capacitors (C_1, $C_{1'}$, C_9, and $C_{9'}$) are not yet available everywhere, although they are almost indispensable in applications such as described here. Standard electrolytics may be used with maximum reverse voltages of 1 V, but their use introduces distortion and premature ageing (because of the reverse polarity).

Provision has been made on the printed circuit board for up to four channels. Two or more PCBs may be connected together; the output and supply sections may then be cut off as required.

Current consumption is about 10 mA per channel.

Parts list

Resistors:

R_1*...R_5*,$R_{1'}$*...$R_{5'}$* = see table
R_6*,$R_{6'}$*,R_8,$R_{8'}$ = 47 k
R_7,$R_{7'}$ = 22 k
R_9*,$R_{9'}$* = 100 k
P_{1a}*,P_{1b}* = 22 k stereo slide potentiometer, log, 58 mm long

Capacitors:

C_1*...C_4*,$C_{1'}$*...$C_{4'}$* = see table
C_5*,$C_{5'}$* = 470 n
C_6*,C_7*,C_{10},C_{11},C_{18},C_{19} = 100 n
C_8,$C_{8'}$ = 10 p
C_9,$C_{9'}$ = 10 μ/25 V
C_{12},C_{13},C_{14},C_{15} = 22 n
C_{16},C_{17} = 470 μ/25 V
C_{20},C_{21} = 10 μ/16 V
C_{22},C_{23} = 100 p

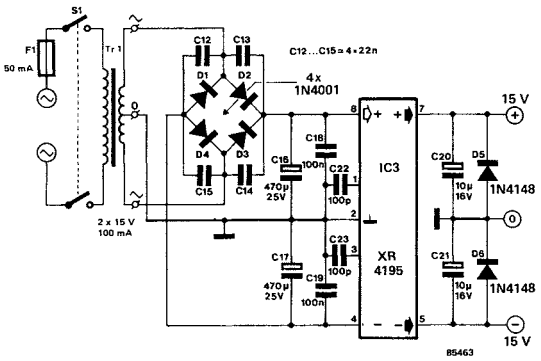
Semiconductors:

$D_1 \ldots D_4$ = 1N4001
D_5, D_6 = 1N4148
IC_1* = NE5532 or LM833
IC_2 = TL072
IC_3 = XR4195

Miscellaneous:

Tr_1 = mains transformer, secondary 2 × 15V/100 mA
F_1 = fuse, 50 mA, delayed action
S_1 = DPST on/off switch
Single-hole fixing chassis phono socket — 2 per channel
PCB 85463

*One of each required per channel.



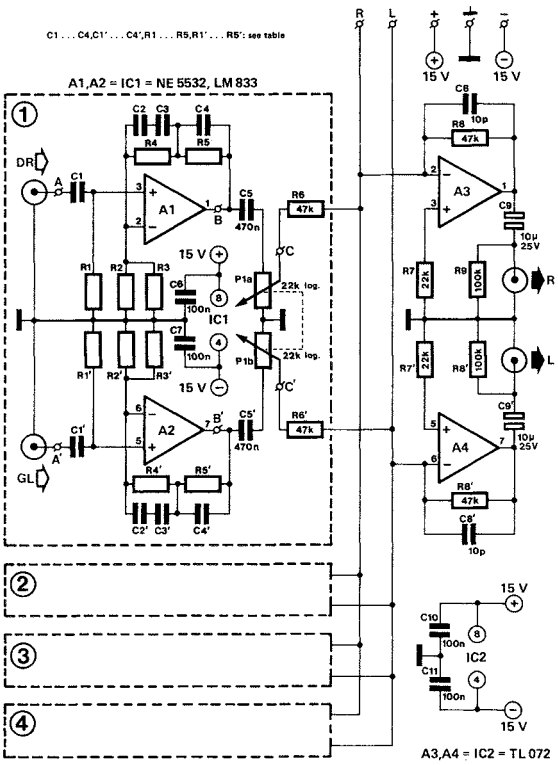


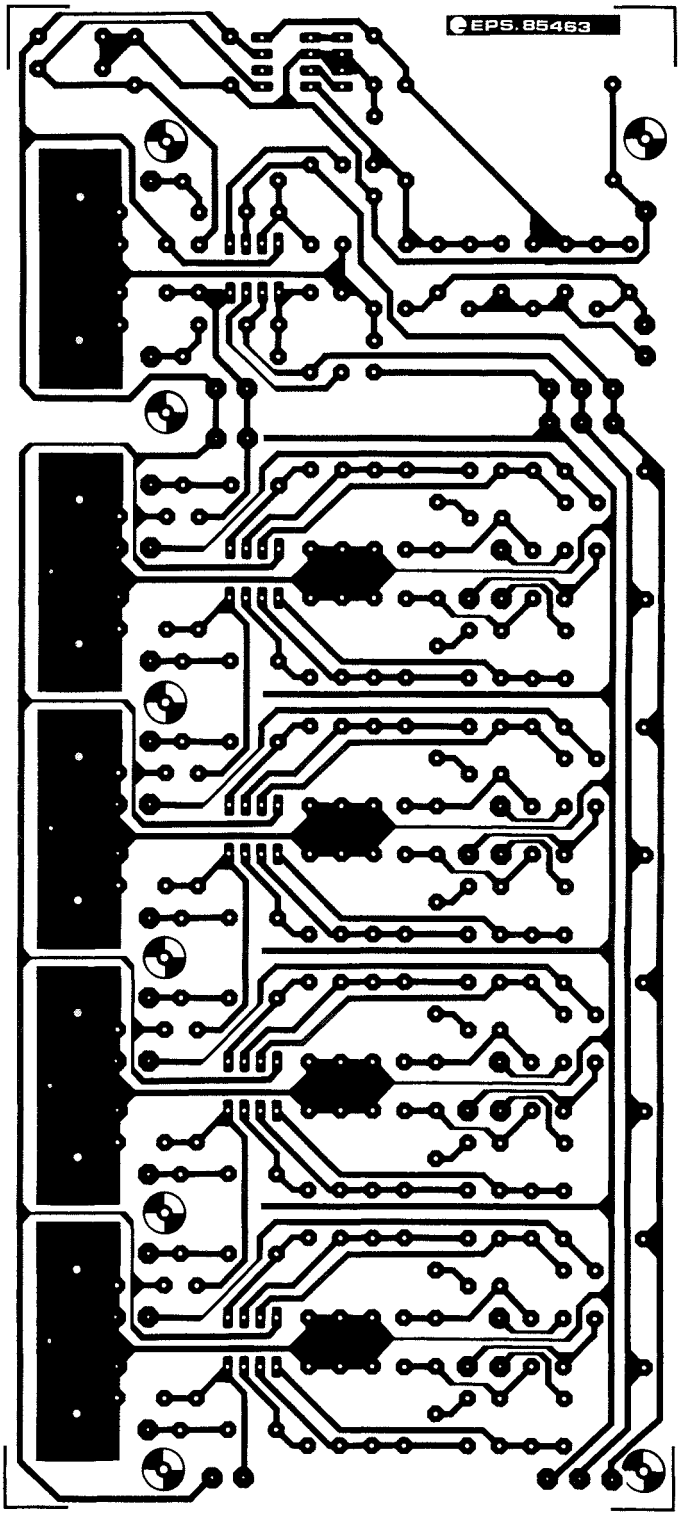
Table 1.

	C_1 $C_{1'}$	C_2 $C_{2'}$	C_3 $C_{3'}$	C_4 $C_{4'}$	R_1 $R_{1'}$	R_2 $R_{2'}$	R_3 $R_{3'}$	R_4 $R_{4'}$	R_5 $R_{5'}$	
pick-up	220 n	1n5	1n5	3n3	47 k	2k2	2k2	100 k	1 M	
tape/cassette	***	***	***	***	***	***	***	***	***	see Note 1
microphone (high impedance)	470 n	***	***	10 p	22 k	1 k	***	o—o	100 k	see Note 2
microphone (low impedance)	10 µ/ 25 V	***	***	10 p	680 Ω	1 k	***	o—o	100 k	see Note 2

Note 1. Wire links A—B and A'—B' required; IC_1, C_6, and C_7 not required.

Note 2. With mono microphones, use input R; do not connect P_{1b}; wire link C—C' required; all accented components not required.

o—o = wire link
*** = not required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