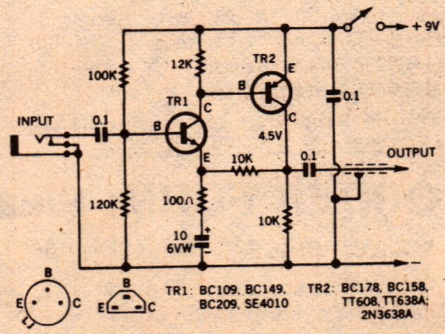
Microphone Preamplifier

This handy microphone preamplifier circuit can be built on a printed board (no. 72/p2) measuring 64 x 54mm. It has a voltage gain of 100 and draws only 0.45mA at 9V, which can be supplied from a small battery. Alternatively, supply can be obtained from a convenient positive point in the associated amplifier, through a dropping resistor.

If supplied through a dropping resistor, the 0.1*u*F capacitor should be replaced by an electrolytic bypass of 50*u*F or more at a working voltage of 12VW or more.

A conventional circuit configuration is used. An NPN and a PNP silicon transistor are connected together in a direct coupled feedback-pair arrangement with both transistors operating as common-emitter amplifiers. Negative feedback is applied from the collector of the PNP transistor, TR2, to the emitter of the NPN transistor, TR1, via a 10k resistor. The ratio of the 10k resistor to the 100 ohm resistor in the emitter circuit of TR1 sets the voltage gain of the circuit to 100.



Input impedance of the circuit is close to 50k, set by the parallel combination (to the input signal) of the bias resistors for TR1. As such, it is suitable for dynamic microphones requiring a load of 50k. It can also be used to follow low output impedance FET preamplifiers for condenser microphones.

Note that although BC237 and BC238 transistors can be used for TR1, individual transistors may prove somewhat noisy in this application. Try substituting for best results. If this proves unsatisfactory, then you will have to use a branded low noise transistor such as a BC109 or BC549. Transistor TR2 may be either a BC307 or a BC558.

Physically, the preamplifier should be mounted inside a metal box connected to the negative supply line to combat hum and penetration of radio and TV signals. The microphone input lead should be a shielded type, as also the connection to the main amplifier.