

Fig. 4—(a) Circuit board foil pattern for the RIAA input board.

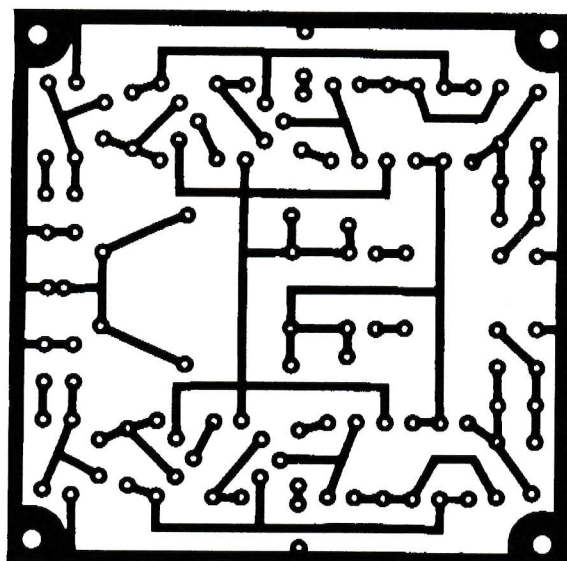


Fig. 4—(b) Circuit board foil pattern for the output board.

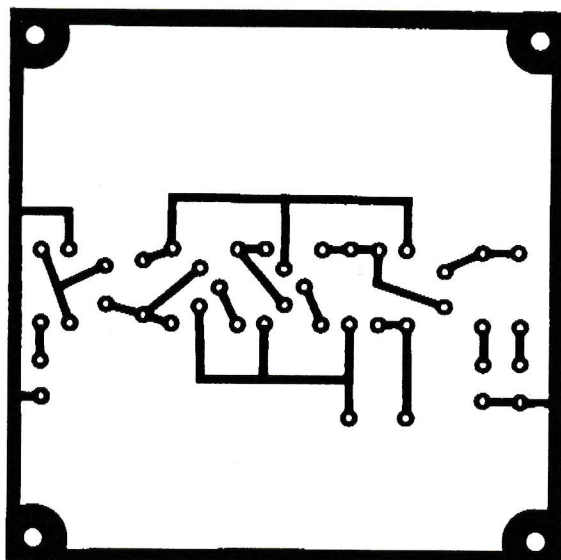


Fig. 4—(c) Circuit board foil pattern for the center channel board.

values should not be used for these elements. The lead compensation provided by C9 in combination with the low-pass filter formed by R21, R22, and C8 suppresses any transient IM distortion and slew-rate distortion in this stage [4]. Power supply terminals E and F and signal output 6 on the output stage diagram are used with the optional center-channel output circuit described in the following.

The power supply for the complete preamplifier is shown in Fig. 2. By isolating the power supply on a separate chassis, any inductive hum coupling from the power transformer is eliminated. With this arrangement, there is no measurable hum in the preamplifier unless it is picked up by a ground loop in the input or output cables. The resistor values for R31 through R34 must be chosen correctly for proper bias of the zener diode regulators D1 through D4. The value for R31 and R33 is 390 ohms. The value for R32 and R34 is 270 ohms if the center-channel circuit is not used and 200 ohms if it is.

The optional center-channel output circuit is shown in Fig. 3. This circuit is designed so that the center-channel output is 6 dB below either input with only one channel driven. The two inputs are linearly added so that for equal left and right inputs, i.e. center-front channel, the gain of the circuit is unity. If the two inputs are equal in amplitude but 180° out of phase, i.e. center-rear channel in matrix quadraphonic systems, the center-channel output is zero. If desired, a 20-kilohm volume control can be used at the center-channel output. However, this is not necessary if the center-channel power amplifier and loudspeaker system are the same as those used for the left and right channels or if the center-channel amplifier has a volume control. In the former case, the center-channel output will be at the correct level since it tracks the left and right volume controls.

#### Construction Details

The preamplifier has been designed with separate 3 inch by 3 inch circuit boards for the phono input stage, the output stage, and the center-channel circuit. The circuit board foil patterns for these circuits are given in Fig. 4. The views in this figure are from the foil side of the boards, i.e. the side opposite to that on which the components are mounted. The foil patterns in Fig. 4 are full scale so that printed circuit boards can be reproduced from the layouts without enlargement.