

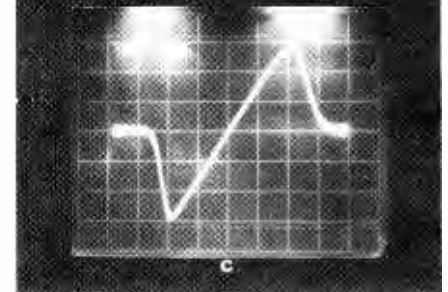
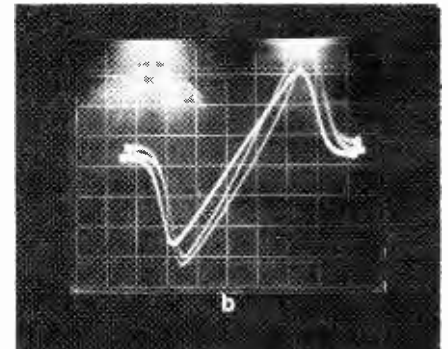
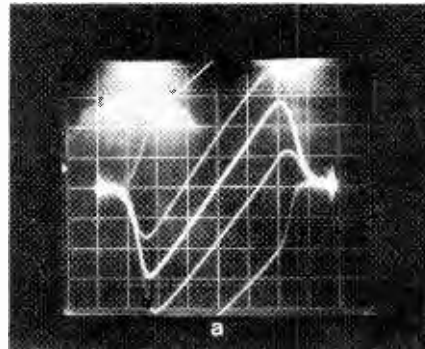
Stereo f.m. tuner — Mk II

Alignment and printed circuit board layouts

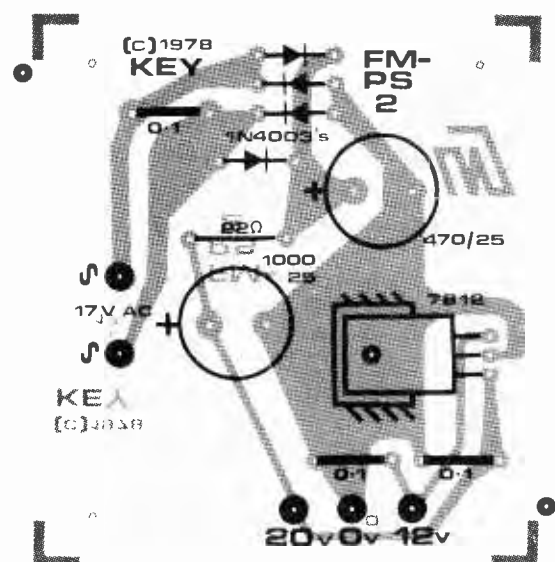
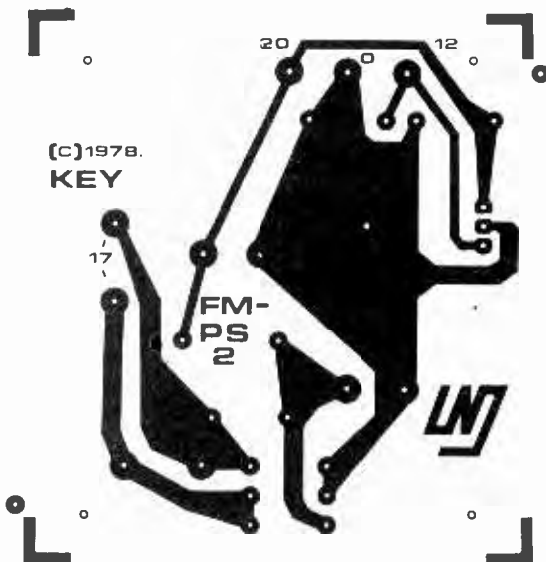
by L. Nelson-Jones, F.I.E.R.E.

The main part of the design, a development of the author's highly successful tuner of 1971, appeared in the September issue (pp. 34-39). This concluding article gives the alignment procedure and also the layouts of the printed circuit boards.

To align the circuit, disable the muting control RV_2 on the i.f. board by turning fully anti-clockwise, and then switch off the a.f.c. Set the tuner supply to +12V using RV_3 , and switch the a.f.c. on again. For alignment of the quadrature coil a broadcast transmission is needed. With the receiver tuned for maximum signal level output on the "signal level" pin of the i.f. board, adjust the quadrature coil for zero difference between the a.f.c. and a.f.c.-reference voltages. With a.f.c. off, slowly tune the receiver through the station and adjust the coil, if necessary, for equal peaks on the S-shaped characteristic. This procedure is only satisfactory for the single-tuned system, and a wobulator must



Effect of tuning L_2 (a) and L_3 (b) in double-tuned discriminator circuit, compared with characteristic of single-tuned discriminator (c). Ordinate 0.5V/cm, abscissa 100kHz/cm.



Printed circuit board layout for power supply

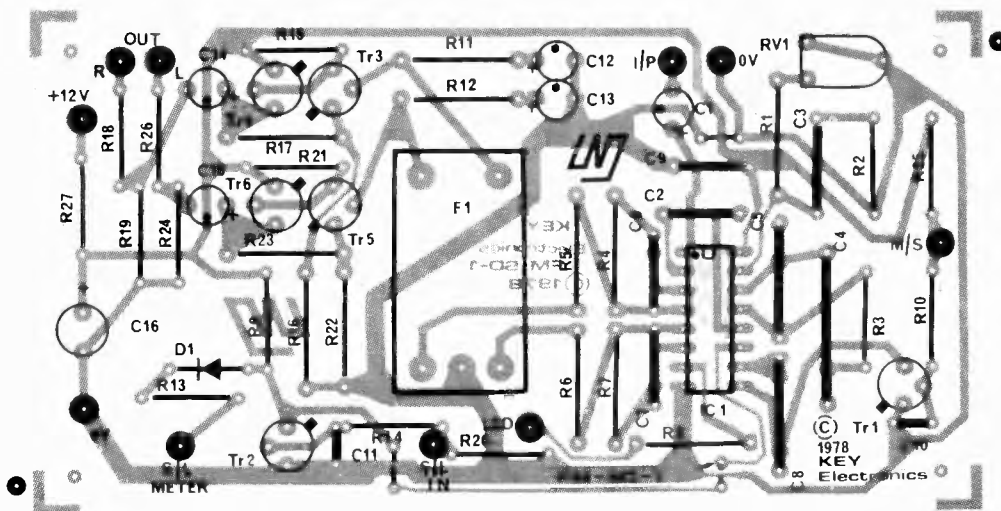
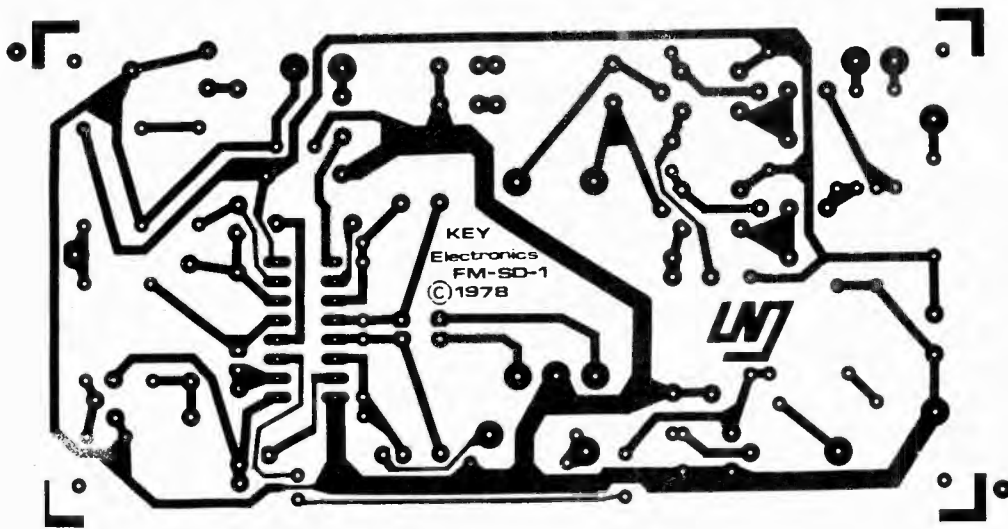
be used for alignment of the double-tuned circuit. Next, set the a.g.c. level control RV₁, CA3189E only, to give a satisfactory law for the signal-level meter.

For the decoder the oscillator frequency is set on a stereo signal. Slowly turn the potentiometer on the decoder board until the l.e.d. lights, and continue until it goes out again. The correct setting is mid-way between these two points. If a counter-timer is

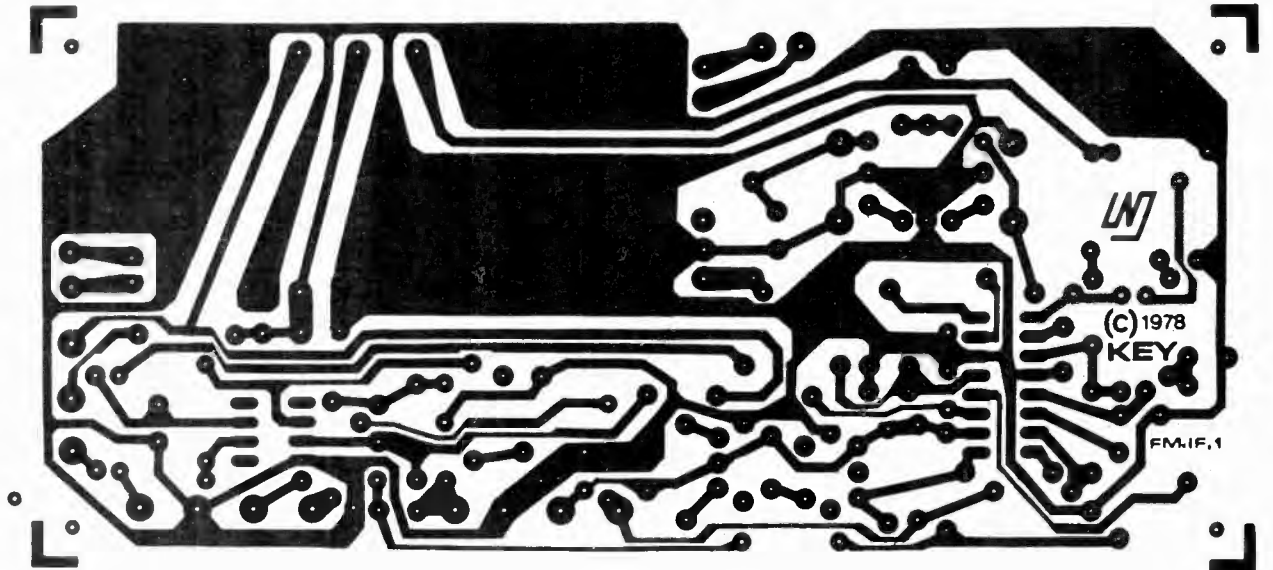
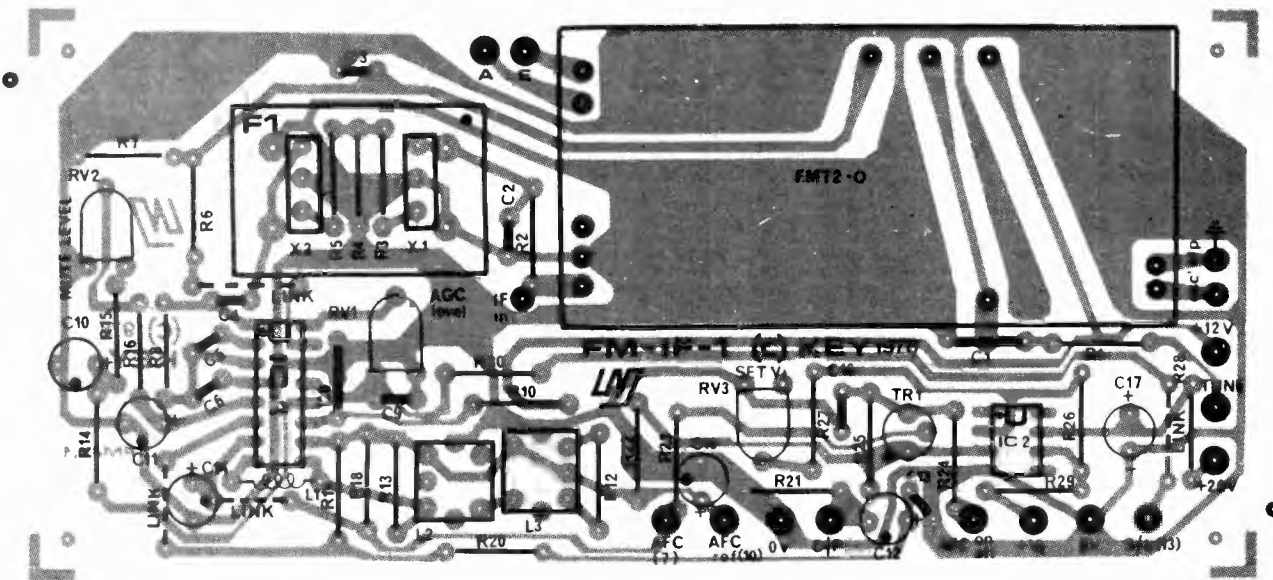
available, set the frequency to 228kHz at the end of R₂ adjacent to the potentiometer.

The pre-aligned front-end needs only the i.f. coil adjusted to the frequency of the i.f. filter. Tune to a station and set for maximum signal-strength on the meter. Carefully adjust the core of the i.f. coil to peak this reading. The front-end tuning adjustments are marked, so that the complete alignment can be carried out if desired. Set the oscillator

range to cover from 87.5MHz at +1.5V tuning input, to 108MHz at +11.5V tuning input. Set the tracking by adjusting the inductors at the 87.5MHz frequency, and the capacitors at the 108MHz frequency. Only the inductors and capacitors of the aerial and r.f. stages are adjusted because the oscillator is already set. For peaking the coils use the signal strength output or meter if fitted. Great care should be used when adjusting the coils because the ferrite



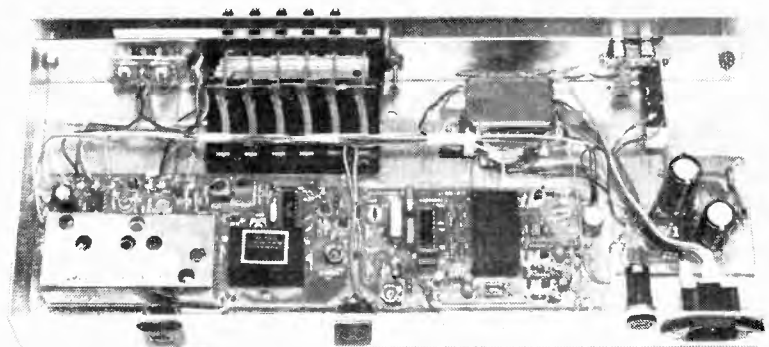
Printed circuit board layout for the decoder



Printed circuit board layout for the i.f. circuit

cores are delicate. The correct adjusting tool must be used at all times.

The Toko screened coils are slightly sensitive to the presence of metal. It is therefore necessary to check the alignment by removing the tool temporarily. This is especially important when setting the symmetry of the S-shaped discriminator characteristic. □



Overall view of the first prototype tuner