

front panel. For those wishing to go it alone, the FRG-7 circuit diagram shows a variable capacitor value of 5pF although the one actually fitted to production sets appears to be about 10 or 15pF. In fact these latter values appear to be the lowest commercially available and so note should be taken of the suggestions that follow.

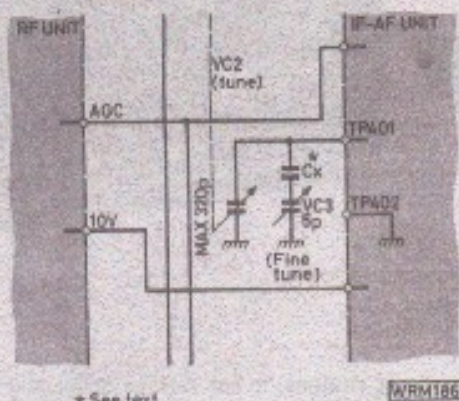


Fig. 1.1

Reduced Fine Tuning Span

The span of the FINE tuning control fitted to later models appears to cover several kilohertz and in practice it has little to offer over and above the geared-down main tuning. This is possibly because the actual variable capacitor fitted appears to have a higher value than that shown on the circuit diagram for the FRG-7. The result is that s.s.b. stations are still a little difficult to resolve especially when a narrow filter is used.

Luckily it is quite easy to alter the actual capacitance swing merely by incorporating a low value fixed capacitor in series with the variable. Just break the fixed wire connection between the variable and TP401 on the IF/AF Board and insert a 5pF capacitor. There is no reason why other values should not be tried so as to get the tuning span to meet personal preference.

However, with the 5pF shown, the author finds the tuning rate to be very similar to the r.i.t. or clarifier controls found on other equipment.

Digital Readout

Although the FRG-7 dial is accurate at worst to a few kilohertz, many people have found a digital readout to be a useful extra. It also has the added advantage that it turns the set into quite a useful 150kHz-30MHz frequency meter. Quite a number of commercially made units have appeared over the years using both l.c.d. and l.c.d.s. Digital frequency meters are still available from several sources from upwards of about £20.

Fitting instructions are supplied with these units but is perhaps worth mentioning two areas that can give rise to problems. First, if batteries are used to power the set it may be advisable to wire the supply of the d.f.m. to the light switch circuit so that power can be conserved. Secondly, most of the d.f.m.s. available use c.m.o.s. circuitry which can introduce a noticeable degree of noise into the rest of the receiver through the positive supply line and direct radiation. The d.f.m. should be housed in a well shielded box and if severe problems are encountered it is advisable to try extra de-coupling capacitors on the d.f.m. circuit board. In extreme cases it may even be worth trying a filter choke in the d.c. input line to the d.f.m.



DC Problems

Talking of d.c. problems brings us to the power supply. Users may have noticed that if the audio is driven hard, distortion sets in and even the dial light will start to dim on peaks. This problem is caused by the mains transformer not being able to supply enough current. A simple test showed that it can only deliver about 600mA whereas the current consumption of the receiver peaked well over 750mA when a beefier outboard 13.8V supply was fed into the external d.c. socket.

For many users this will not be a problem but, if like the author, the user occasionally feeds the set into such things as RTTY units then there can be drawbacks. Tests on the receiver under such conditions have shown that the internal supply, which on the unregulated side runs at about 14.5V, can drop alarmingly. In fact it can go so low on peaks that even the regulated supply sags and can cause slight pulling on the b.f.o. which in the case of RTTY can pull the signal tone out of the passband range of the f.s.k. decoder.

The Solution

The obvious answer is to fit a larger transformer and there is certainly plenty of space inside the FRG-7 to do this. The transformer already fitted is rated at 10.6V a.c. which is a non-standard value but tests by the author have shown that a 12V transformer does not cause either the regulator transistor (Q411) or the audio i.c. to run any warmer than usual. The latter by the way is run from the unregulated d.c. supply.

There is however an even better solution, sadly though a more expensive one, and this is to use a well regulated 12V d.c. (in fact 13.8V now seems to be the norm) supply separate from the set. The supply should be capable of delivering at least 1A, preferably more, and its use will help us cure yet another problem: noise from the mains earth.

Hums and Buzzes

FRG-7s sold in the UK through the official suppliers were fitted with a three core mains cable which had the earth wire soldered to a tag on the chassis. It has long been recognised that the mains earth can be a source of r.f. noise and is only intended as a safety path. The use of a separate earth is highly recommended but even this will have little effect if the mains earth is still connected to the