

# Improving The 'EICO 753' on 14 MHz

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**The EICO 753 Tri-band transceiver might be described as a popular, low cost, utility type set. The writer has owned two such units and found their performance quite satisfactory, except that the gain, sensitivity, and S/N ratio on 20 metres is below that on 80 and 40 metres. The manual gives the sensitivity as 1  $\mu$ V for 10 dB S/N, however better than .5  $\mu$ V on 80 and 40 metres is claimed by a USA magazine which put the set on test.**

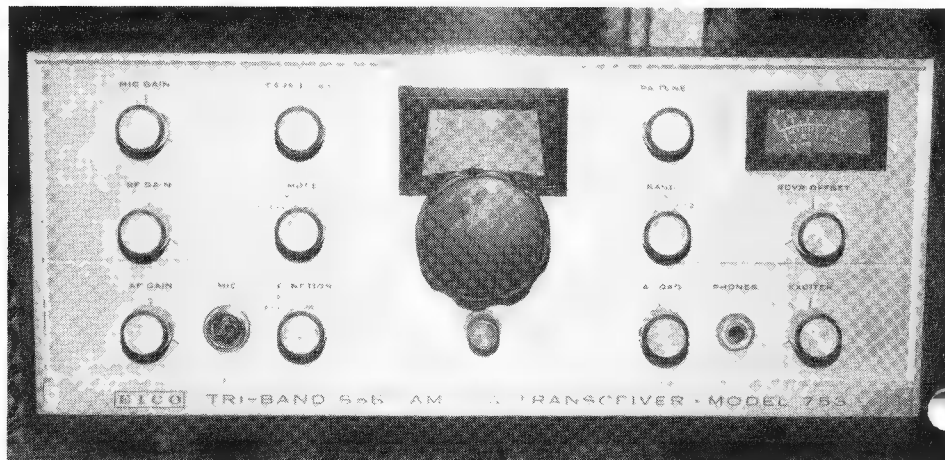
If DX is your main interest, an improvement on weak 20 metre signals can be obtained by the following very simple and almost instant modifications. In brief, proceed as follows—

Remove ground wire between RF valve 6BA6 V16, pin 2 and ground. Remove resistor R61 from pin 1 of V16 and connect it to pin 2 of V16. Wire a .02 disc ceramic by-pass condenser from pin 2 of V16 to ground. Wire a 1 meg. resistor between pin 1 of V16 and ground.

On the tag strip associated with the wiring for the VFO tube 6EH7 V11 (or solid state modified VFO) remove the 27K resistor R56 and replace it with a small 1 mH RF choke. Remove the 47K resistor R53 and replace it with a 4.7K resistor.

These changes should result in maximum RF gain on weak signals and better first conversion efficiency. Tagging the AVC line on to the suppressor grid, pin 2 of RF tube 6BA6, does not result in any increased pumping or blocking as might be supposed.

It is common practice to tie both the IF and RF gain to one variable control and designate it on the front panel as RF gain.



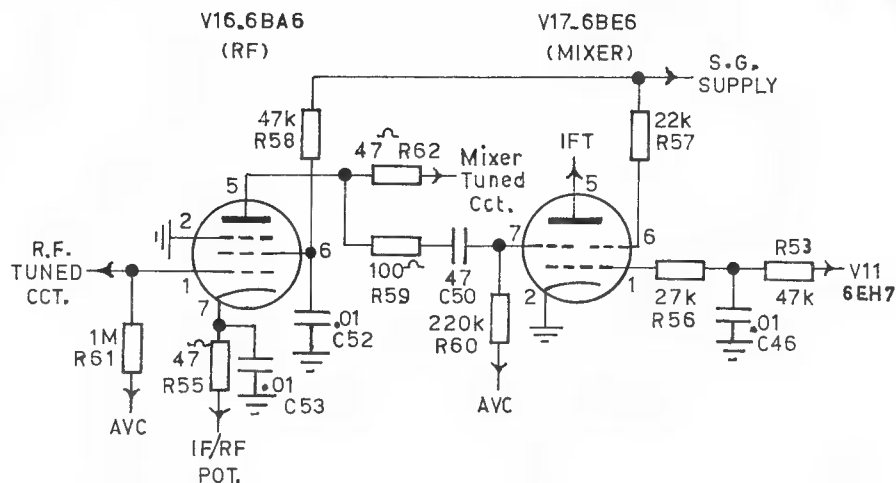
This makes for easier operation by virtue of only one knob. However, in the case of the EICO on 14 MHz, there is a point reached when this control is advanced towards maximum, where the internal noise and signal, increase at the same rate. This is because of excessive and unnecessary gain through the IF strip where much of the noise is generated.

Better S/N ratio and greater flexibility on the weaker signals can be obtained if the IF and RF gains are manipulated separately. This means an added knob on the front panel. It can be done without spoiling in any way the aesthetic or symmetrical appeal of the panel, by installing a suitable 10K RF control potentiometer in the place at present occupied by the PHONES. The speaker jack, at rear, is suitable for phones, as it is on the same circuit, 3 ohms. If the set is used exclusively for CW, the RF pot can be installed where the MIKE GAIN is

now placed. (Do not cut the leads to the MIKE GAIN: simply let the pot rest loose in the set—you may want to restore it).

However, as a temporary measure, the effect of this modification can be gauged without changing anything at all. Simply disconnect, at the RF GAIN pot, the cathode lead from the RF tube 6BA6, V16, and earth it. This will allow maximum gain through the tube. Previously weak signals required the RF gain to be  $\frac{3}{4}$  or more advanced. Now it will be found only necessary to advance the gain  $\frac{1}{3}$  to  $\frac{1}{2}$  and the receiver noise, previously audible, will now be virtually nil. If you favour CW DX and happen to live in an area where there is no blocking from nearby stations, this modification could remain as a fixture.

Selectivity in the EICO 753 is up to manual specifications. In fact, the 30-1 fine control of the main tuning is too coarse for comfortable handling of weak sigs. Fin



RELEVANT PART OF THE ORIGINAL CIRCUIT OF 'EICO 753'.

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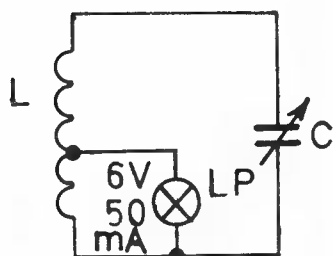
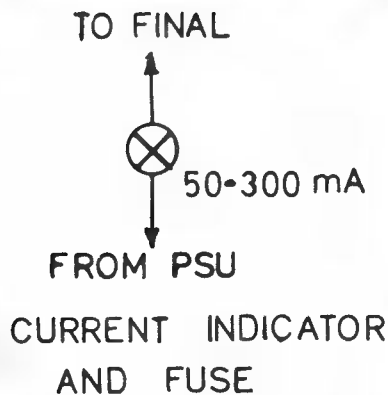
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## Try This

with Ron Cook VK3AFW  
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INDICATING  
WAVEMETER

trim is usually done with the RX-OFFSET. But again, this control is too coarse and would be improved by the introduction of a small 3-1 or 5-1 vernier. This is something the owners of the set can ponder on.

The transceiver's IF strip is at 5.2 MHz. In common with some makes, it is prone to outside QRM, at this frequency. There will be times when a strong modulated signal breaks through and renders the set virtually useless. It matters not if the antenna is selective with co-ax feed, or a random wire with an ATU. Fortunately, it is easily cured. In an earlier issue of "AR", a suitable trap for this type of QRM was described. It is effective and can be constructed and tuned, in a matter of minutes. The simplest way is to use wire of sufficient gauge to be self-supporting. Wind 12 turns at about 3/4 in. diameter and spaced about 1 1/2 in. long. Solder the ends to a heavy duty .001 uF condenser and insert in the co-ax line, at the set. Now, with a screwdriver short out a turn, or two, or fraction thereof, until the offending signal is at a minimum. Enclose trap, at leisure, in small metal box

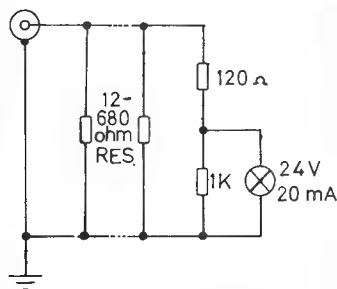
### LAMPS AS INDICATORS

In addition to its role as a power on indicator, or dial illuminator, the humble light bulb can be of great use as a cheap indicator of current, voltage or power.

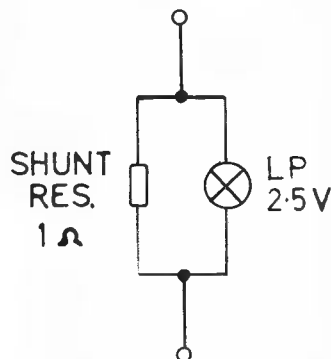
Light bulbs can be powered by DC, AC or RF and provide highly visible indications.

A light bulb in series with a transmitter final provides both a dip indicator and a fuse in case of overload.

In the aerial circuit, a combination of



DUMMY LOAD POWER INDICATOR



RF CURRENT INDICATOR

and re-trim coil.

A final comment, on the transmitting section—the PA. If there is a tendency to instability, reset the neutralizing condenser as per manual instructions. If the trouble still persists, connect to the junction of R110 and the long wire leading from it, a .01 disc ceramic to ground. The output of the PA on 14 MHz is likely to be about 10% below that of the other two bands: this seems to be mainly in the set design. However, increasing the coupling condenser C97 between driver tube V15 and PA V13 by as much as 3 to 5 times in capacity should result in an increase in output of about 5%. Do not forget to re-align tuned circuits L10, L11, L12.

A short perusal of the circuit manual will show that these modifications for improving the EICO 753 are simple and virtually self-explanatory. The S/N improvement is quite noticeable and brings the performance on 14 MHz closer to that pertaining on the other two bands. It is also an easy matter to restore the changes to "as-was", in a matter of minutes.

light globe and resistors can provide a means of indicating antenna currents.

Other uses are in wavemeters and as a power indicator for a dummy load.

Gil Sones VK3AUI

### QSP

#### BEWARE OF NICAD MEMORY

Just a reminder if you have NiCad batteries in your walkie talkie or other portable appliances. They have a "memory" such that if you run them down just a little bit then recharge, they start believing that is all they should put out and will go dead long before you expect them to. The solution—periodically discharge them then give them a full charge. From 'Collector & Emitter', June 1975.

#### USA 70 CM BAND

Ham Radio, June 1975, contains references to more threats to the 420-450 MHz band from 20 KW ERENS (Extended Range Electromagnetic Navigational System) transmitters with a range of 250 miles in Dallas on 430 MHz and new ones projected on Cape Cod and Montauk Point L.I. The comment is, "If permitted, these pulsed navigational systems would make a large portion of the 420-450 MHz band practically unusable".

#### QSL MANAGER FOR VK CONTACTS

A note from VK5BS QTHR, advises he handles QSL cards for VKs contacting ZK1CV, ZK1BS and VK5BS/YJB.

#### CONTEST LOGS

Sound comment seen in the write-up of the 1974 CQ WW DX contest results column in CQ for June 1975—"Stop breaking my heart. Stop recopying your logs. Every year I see log after log with 500 to 3000 contacts recopied—by hand. It ain't necessary. Hones. Use carbon paper or make a photocopy. Rewrite any illegible calls in the margin 'Contests' are supposed to be fun and recopying logs ain't fun. Besides, recopying logs can introduce errors no matter how careful you are".

#### WARC 1979

CQ June 1975 quotes introductory remarks by A. Prose Walker (chief of FCC amateur and CB Division). Chairman of the Amateur Service Working Group's Conference on May 8, at FCC HQ in Washington as follows—"This could be a golden opportunity for Amateur Radio. We're in a position, hopefully, to shape Amateur Radio for the remainder of the century and well beyond. Our goal is to do everything possible to strengthen Amateur Radio's position at the 1979 Conference. Our task won't be an easy one and no one can guarantee that we will succeed. That's why we are here today . . . to get things started in the right direction, and to give it our best."