

# WARC for the FT-101E

*Here's how to join the fun on our new 12-meter band.  
And you'll be ready for 18 MHz, too!*

The FT-101E series of transceivers has no provision for the new bands, and since I am well satisfied with the operation of the FT-101E, I did not feel inclined towards the expense of changing to one of the later models which includes these new bands.

A thorough study of the schematic and the innards of the transceiver revealed that, with careful working and not rushing things, the modifications required would be relatively simple. (By the way, the handbook states for the "Aux" position of the bandswitch: "any 500-kHz coverage between 14.5 and 28.0 MHz." Don't believe it; it works FB

for 24.5, but certainly not for 18. I know; I tried it.)

After consideration, it was decided to forfeit band 10D, as 29.5-29.7 MHz is never used by me and this position was used for the 24.5-MHz band. Simply plug in a 30.520-MHz crystal in place of the existing 35.52-MHz crystal and retune TC23 to obtain the correct output at the test point on PB1181 (rf unit), namely 0.3 V rms on the rf voltmeter, and the rig will work perfectly on the 24.89-24.99-MHz band. There is no need to touch the alignment of the rf and driver stages TCs, as these are tied together for the 10m bands, and the inductance variation in the "preselect" tuning takes

care of the lower frequency quite adequately.

The 18-MHz band is put into the Aux position and requires a little work on the various circuits in addition to plugging in a 24.02-MHz crystal and tuning TC24 for the required 0.3-V-rms output to PB1181. Fortunately, all the work is done at the bandswitch, although the chassis must be removed from the cabinet to facilitate working on the various switch sections. The chassis is upside down, and references to top and bottom refer to positions with the chassis so placed.

In making the modifications, each switch section should be worked on and completed separately. I started with the easy one, i.e., SW1M. The connection between the Aux and the 10m lugs is removed and a heavy wire is soldered between the Aux and the 15m lug. This completes SW1M.

The various switch poles can be identified and checked by setting the bandswitch to the required position and checking the rotor wiper blade which will be in the required position. This is important when working on the other switch wafers as there is very little space, and without a good light spotted on the wafer being worked on, it is almost

impossible to see anything. In addition, a soldering iron with a long, thin bit should be used because of the lack of space for working.

I next tackled SW1G. It will be seen from the schematic that there are no connections to the Aux and 10m switch lugs so that the only thing to do is to connect the Aux lug to the 15m lug. This is a little awkward, and the reason for the long, thin bit on the soldering iron will be obvious. Note that SW1G is the 8th wafer from the front, not the 7th as would be expected. It is in the driver plate compartment.

SW1E is the most difficult and awkward; this is the 5th wafer from the front. The first thing is to break the connection from the Aux lug to the 10m lugs. As this lug is on the bottom of the switch, ordinary cutters cannot be used: There is only about 3/8" working space. I overcame the difficulty by using a very thin round file, and slowly filing through the connecting wire. This requires a great deal of care and patience. When this was completed, the short pieces of wire that remained were bent out of the way. From the Aux lug, a white wire goes to TC5; this connection to TC5 is removed at the trimmer PCB, and the white

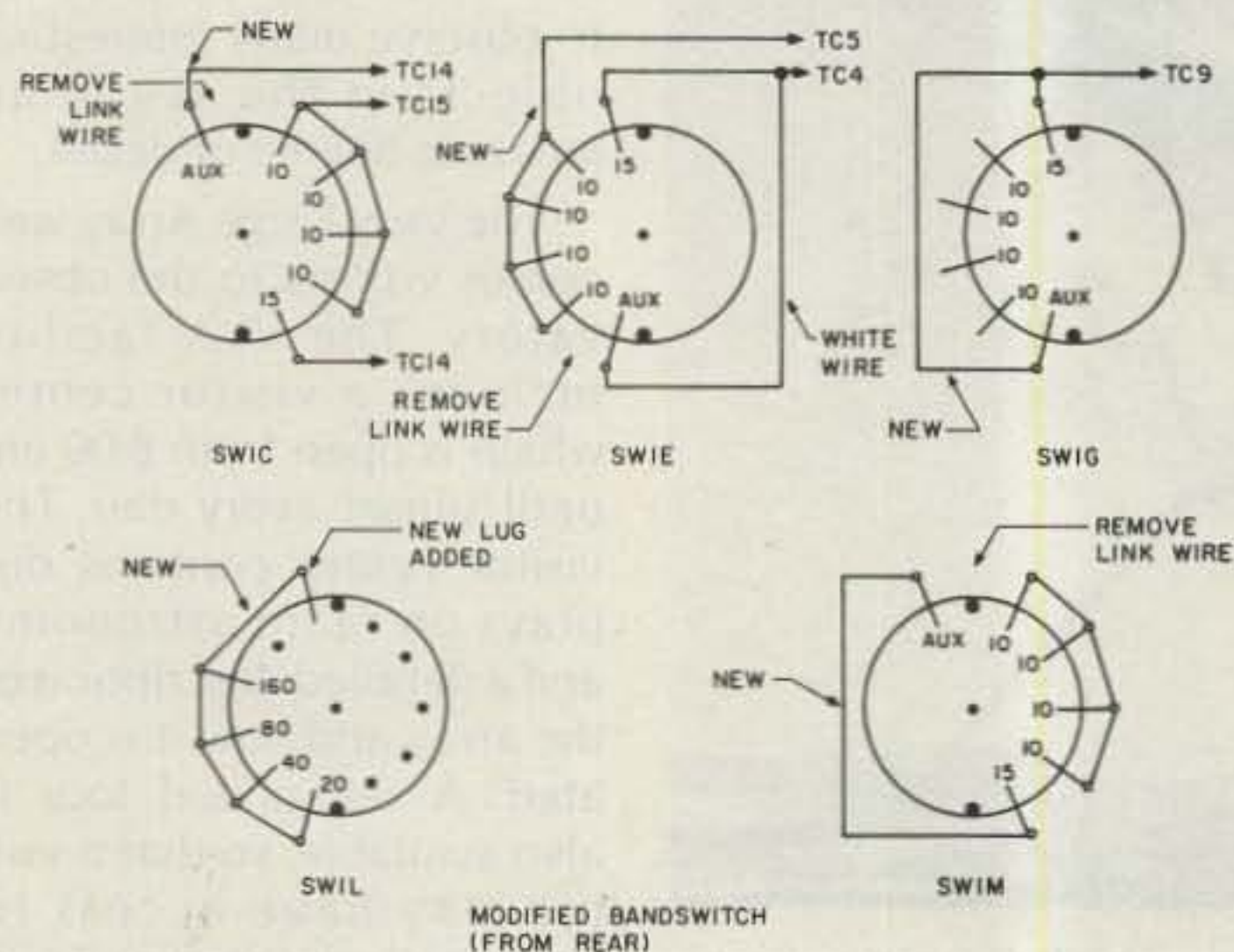


Fig. 1. Modified bandswitch (from rear).



wire is used to connect the Aux lug to the 15m lug. A new wire is soldered to the 10m lugs at the top of the switch wafer and then connected to TC5. The 15m lug is already connected to TC4 and needs no further attention.

The modification of SW1C, 3rd wafer from the front, proved easier than at first expected. I started by removing the connection between the Aux and 10m lugs positioned on top of the switch wafer. A wire is soldered to the Aux lug and fed over and soldered to TC14 (15m trimmer); this connection is made on top of the trimmer PCB.

At this point, I put the whole rig together again and fired it up to check tuning and performance into a dummy load. Everything was FB on all bands except 18 MHz. There was not enough capacity in the one section of VC2, which is used on 15 MHz and above, to

load the output satisfactorily. So, the rig was opened up again as it was obvious that more capacity had to be introduced in the loading for the 18-MHz band.

After much thought and study, I decided to modify SW1L by adding a new contact lug at the Aux position on top of the wafer. A lug was removed from an unused spare rotary switch that was on hand; this was done by carefully drilling it out and removing the rivet holding it. This lug was then mounted in position on SW1L using a very small bolt and nut, and a stiff wire bridged it over to the 160m lug on the switch. (A spot of solder on the nut and bolt prevents movement.) The lug must be carefully positioned and set so that the rotor wiper arm makes a good clean contact and moves smoothly.

The rig was now reassembled and tested into the dummy. All bands, includ-

Band	Preselect	Plate	Load
28	9.2-9.6	8.7-9.1	3.0
24.5	8.0	7.5	2.6
21	8.8	7.9	2.0
18	7.3	6.9	2.0
14	7.0	7.0	2.0
7(low)	5.1	4.5	3.0
3.5(low)	3.2	2.3	2.0

Table 1. Dial readings.

ing 18 MHz, were now capable of being tuned normally. The measured outputs into the dummy (CW tested) were 110 Watts on 24.5 and 28 MHz and 125 Watts on 18 MHz and other bands.

As these bands have been available in ZS for over a year, an air test using a very rough and ready dipole, badly installed, produced two TR8 stations on the first CQ call.

As a guide, the dial readings given in Table 1 for the various controls are as recorded by the writer. Different installations will produce variations.

Upon consideration, and

with a good deal of hindsight, it would seem that SW1L need not be modified. The addition of a 200-pF (1,000-V) capacitor in parallel with VC2 (the front section which is in circuit on all bands) would provide ample capacitance for loading on 18 MHz and would only cause the tuning of the other bands to be moved towards the center of the load dial.

I have ignored the modification to put the FT-101E series on 10 MHz, first because it was admirably covered by WB9DDF in the November, 1983, issue of 73, and second that band does not interest me. ■

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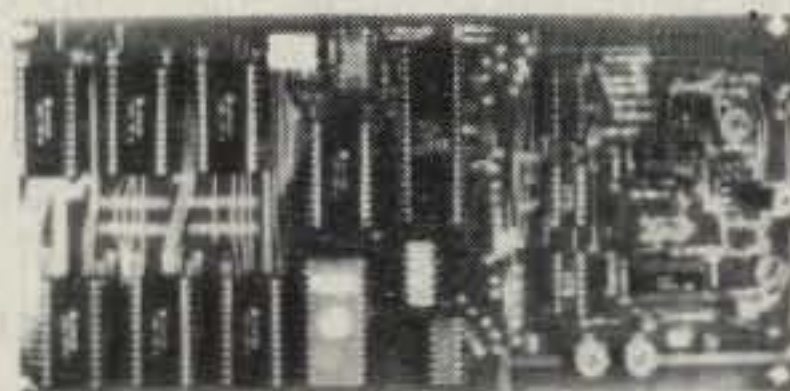
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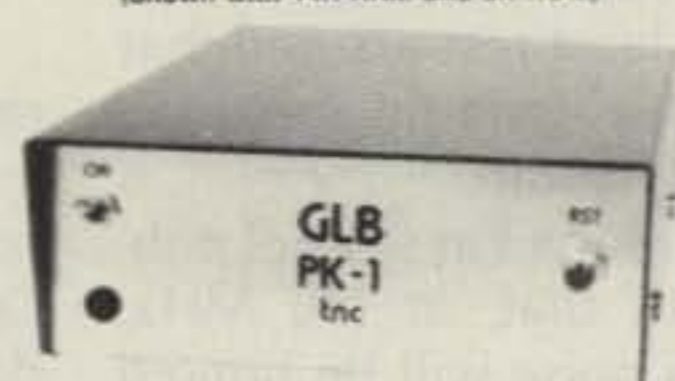
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