

In the Shop with Harry Leeming G3LLL

Harry Leeming G3LLL suggests an alternative to the 6JS6C valves for early FT-101s.

The 'mystery' picture shown in this column in the July issue was in relation to David Kemplen's answer to the question: 'What will happen when supplies of suitable 6JS6C valves run out for the early FT-101s?'

After reading articles in the May and September 1999 issues of *QST*, David had successfully converted his early FT-101 to run with 6146B valves in the p.a. stage instead of 6JS6Cs. Along with one or two other helpful souls, David sent me a copy of the original article.

I haven't carried out the modification myself but I've seen a rig after having been converted in a similar way, come in for repair that worked okay. So, throwing in my own pennyworth, I would suggest going about the modification as follows.

First, make sure that the p.a. valves grid coupling capacitor C13 has been replaced with a 100pF capacitor of 3KV or more voltage working. Do not leave the original capacitor in circuit; it will almost certainly go leaky.

Whatever you do, **don't** borrow someone else's p.a. valves to test the rig without ensuring that C13 has been replaced; if it leaks it will blow the borrowed valves, even on receive! Next, establish that the rig is in perfect order and in correct alignment; you will end up in total confusion if you try and modify a faulty rig.

Now, you are ready to start the work. Disconnect the rig from the mains, wait two minutes for the h.t. to discharge and then short circuit the top caps of the p.a. valves to chassis just to be sure. Replace the nine pin valve holders with a couple of international octal bases, (check that the valve holders physically fit the valves, Mazda Octal holders look identical but will not fit 6146 valves!) and then wire the leads to the correct pins, as shown in **Fig. 1**, and in David's photo (**Fig. 1a**).

Next, to allow for the reduced inter-electrode capacity of the 6146B's, wire a 25pF variable capacitor between the grid and cathode of one of the p.a. valves and then, to make the neutralising less critical, wire a 2000pF capacitor in parallel with the 200pF bottom capacity neutralising feedback capacitor C11.

Then, you can 'fire up' the rig without

any valves fitted, (**with one hand in your pocket, there are some dangerous voltages around**) and check the voltages on the 6146B valve connections. In the receive mode you should have about -70V on the p.a. valves control grids, +180V on the screen grids, and around +750V on the top cap connectors.

If all seems ok, pull the mains plug out, wait two minutes, short the top cap connectors to chassis again and then fit the 6146 valves. At this point, set the neutralising capacitor at half capacity, the new 25pF trimmer capacitor at almost maximum and refit any screening covers you have removed.

Next, you should run the rig into a dummy load on 3.5MHz, it should tune up and provide some output. With the pre-selector set at the point where maximum receive signal strength is obtained, peak the new 25pF trimmer for maximum drive.

Set the neutralising capacitor so that peak r.f. output into the dummy load coincides with minimum p.a. current and then work gradually higher in frequency, resetting it as you go, as described in this column in the July Issue.

Once the rig is working you should get about 50-60W r.f. out into the dummy load. If the rig was in correct alignment before you started the modification, the alignment should now be more or less correct but final adjustments will be needed on 28MHz.

Tune to the crystal calibrator in the centre of the band and peak the pre-selector for maximum. In the transmit mode peak the new 25pF trimmer for maximum drive as its setting will be more critical on this band. If you are short of drive re-peak this trimmer whilst trying the pre-selector first slightly to the left and a little to right of peak, for the best results.

Next, try the rig on all bands and see

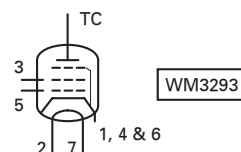


Fig. 1: Make sure you wire the leads to the correct pins (above).

Fig. 1a: David Kemplen's FT-101 with modification complete (below).

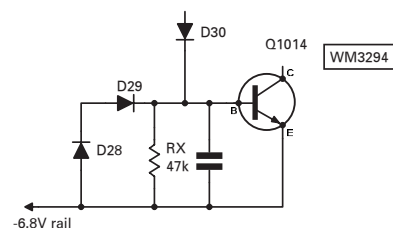


Fig. 2: To cure an a.g.c. problem on older FT-290Mk1 rigs, try fitting on receive, a 47k Ω resistor in the circuit as shown here.

that you get good a.i.c. action. If you are short of drive on any band, do not touch the new 25pF trimmer but repeat the above operation using the trimmers TC6 to TC10, as shown in the alignment section of the manual, on the various bands. Once everything seems okay and the neutralising has been rechecked on 21 and 28MHz, it's time to increase the power.

Disconnect the rig from the mains, wait two minutes, then remove and insulate the 160V screen grid h.t. feed wire from L13. Take a new lead from L13 to the 300V h.t. rail and the job is done. You should now get around 100W out with a pair of 6146B valves or a little less if you use 6146A valves.

