

PUTTING THE AF-67 ON SIX

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The migration to six meters in Central Florida led to an investigation of my brand new Multi-Products AF-67 for a possible conversion to six meters. This proved to be the perfect solution to the transmitter problem, as it eliminated the need for a separate transmitter for six meter operation.

An investigation of the Elmac circuit revealed several interesting facts. In the Elmac both the final plate and loading condensers are dual section units, one section of each is used for the higher frequency bands, and both sections for the lower frequency bands. This meant a better lc ratio would be possible for six meters. Also, because the Elmac had four tubes in the rf strip, it seemed possible to avoid doubling in the final amplifier. Last, but not least, the 160 meter position of the band switch could be used for the new six meter position, since there is no 160 meter operation permitted in this area.

Conversion to six meters was started with the final stage, working back to the oscillator. Everything went smoothly until the problem of a tuned circuit for the crystal oscillator came up. This at first seemed to be a major problem, since it must be switched out for the other bands. To complicate matters the oscillator band switch was inside the VFO housing.

The simple solution which resulted was to put the tuned circuit from the plate side of the crystal socket to ground. Since there were two crystal sockets in the Elmac, the coil could be switched out of the circuit by using crystal socket "X2" for six meters only, and crystal socket "X1" for all other bands. VFO operation was not considered because the VFO did not cover the frequency necessary for multiplying to six meters without modifications, and crystal operation was considered satisfactory. The oscillator plate coil was first grid-dipped to 8.3 mc, but proved to work better when resonated about 7.6 mc, as the stage had a tendency to cut out of oscillation when the coil was tuned too close to the crystal frequency. This coil must be grid-dipped only with the crystal switch in the "X2" position.

After final checking, the rig was fired up and adjusted for maximum grid drive with the final

high voltage off. To my surprise I had over three mils grid drive. High voltage was applied to the final and it dipped sharply into resonance. Power output on six was compared with the output on ten, and proved to be about the same.

Several other Elmacs have been converted in the same manner and all work equally as well. It is a real potent signal squirter, accounting for 27 states, Canada, and Sweden to date on six meters. Assuming you are sold, proceed as follows:

Locate the crystal socket "X2" and connect coil L-a from the plate side to ground. (This is the top lug on this socket)

Next clip out resistor R-34, and install coil L-b, with condenser C-a in parallel with it, from the terminal of switch SW-31 from which the resistor was removed to the junction of R-33 and C-35.

Remove the 160 meter coil, L-41, and use the form to wind new coil L-c. Reinstall this coil.

Note: in referring to switch terminals on switches SW-51 a, b, and c, terminals are counted from counter-clockwise to clockwise as viewed on the schematic diagram of the AF-67. As viewed from the rear of the transmitter, terminal 6 on each wafer is just to the right of the mounting screw which passes through the three sections of the band switch. Section a is the wafer on top, b in the middle, and c on the bottom.

Next clip out the wire connecting switch terminals 4 & 5 to 6 on switch SW-51A. In the same manner, remove the wire connecting terminals 4 & 5 to 6 on switch SW-51C.

Next locate the 80-160 meter tank coil, L-54. Clip the wire which connects one end of L-54 to terminal 6 of switch SW-51B. Very carefully cut coil L-54 at the center tap, and remove the half which was used only for 160 meters. Do not remove the wire from the center of the coil which connects to terminal 5 of switch SW-51B. Disconnect the remaining wire on terminal 6 of SW-51B, and re-connect to terminal 5 of SW-51B. Install the new 6 meter coil, L-d, from terminal 6 on switch SW-51B

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Coil Data

- Coil L-a:** 20T. #30 scramble-wound on a $\frac{3}{8}$ slug for m. (8 mc)
- Coil L-b:** 22T. #22 close-wound on a high value 1-watt res. (25 mc)
- Coil L-d:** 2T. #16 $\frac{1}{2}$ inch $\frac{3}{8}$ inch, wound on former coil L-41 form (50 mc)
- Coil L-d:** 2T. #16 $\frac{1}{2}$ inch ID, spaced to $\frac{3}{4}$ inches. (50 mc)
- Condenser C-a:** 7-40 mmfd ceramic trimmer

to terminal 6 on switch SW-51C.

This completes the conversion. Place an 8334 (and up) mc crystal in socket "X2". If a grid-dip meter is available, check all the new coils to be sure that they are near resonance. Turn the rig on, with the high voltage off the final (switch SW-52 in extreme counter-clockwise position) and adjust coils L-a, L-b, and L-c for maximum grid drive, which should be about three mils.

Assuming all is satisfactory, put high voltage on the final and check for resonance. The tank circuit is resonant with the tank condenser near minimum capacity.

This transmitter should give you very satisfactory service on six meters. It will load to just about anything you could think of using for an antenna. I would like to thank Michael Axman, W4VOZ, who assisted with the "brain work" in this conversion. ■