

Using the MB-40SL as a Grid Tank

Simple Modification for Better Performance

BY KATASHI NOSE,* KH6IJ

AFTER constructing amplifiers using the National MB-40SL in the grid circuit of high-power tetrode amplifiers with pi-network output, it became apparent that efficiency was sadly lacking on the high-frequency bands. On 28 Mc., the coil became hot enough to char the form, the plastic melted off the link wire, and the Faraday shield dropped off. But on the lower-frequency bands there was an overabundance of drive. Using a Viking Ranger, about 70 watts of drive produced about 1.3 watts usable output at the grid of a 4-1000A. A similar lack of efficiency was found in another amplifier using paralleled 4-250s.

With slight modification, heating is reduced, the drive is equalized, efficiency stepped up on the high frequencies, 160-meter operation added, and more positive neutralization is realized. A diagram of the original tuner and modification is shown in Fig. 1.

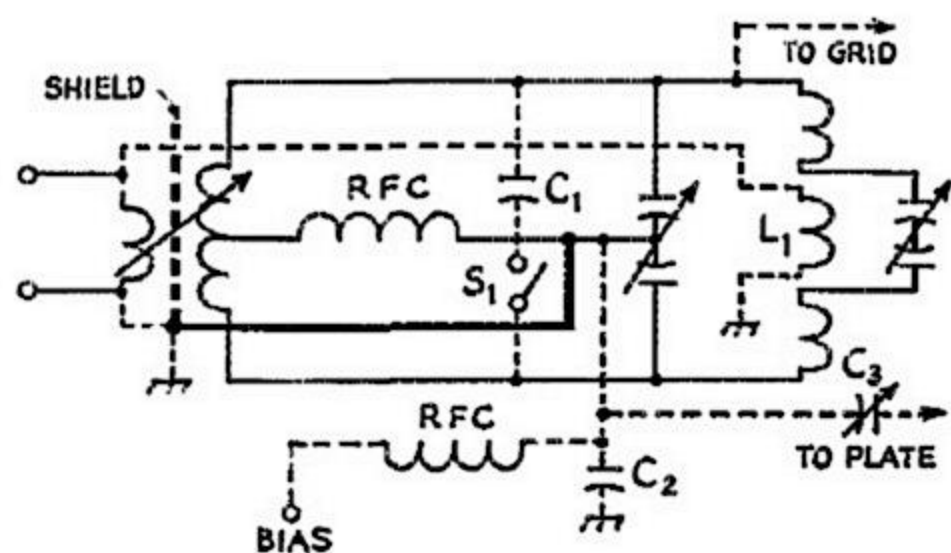


Fig. 1 — In this diagram, the dashed lines show wiring to be added. The heavy line indicates a connection to be removed. The remainder is the original circuit of the MB-40SL multiband tuner. The 160-meter padder, C_1 , is a 400- μ mf. 2500-volt mica unit. S_1 is a ceramic wafer switch, and L_1 is a single-turn link.

Better Matching

The original link was designed for impedances higher than that of the usual coax line. Removing two or three turns of the original five-turn link, and grounding one end directly to chassis stepped up the drive. This alone may suffice. However, a one-turn link, wound around the center of the high-frequency coil, and connected in parallel with the regular link, brings the excitation directly to the high-frequency coil without going through the low-frequency coil. These two modifications brought up the efficiency tremendously, and reduced heating to a negligible level. In use, the variable link is loosely coupled for high-frequency operation, and coupled tightly for low-frequency operation. A reduction in drive is encountered on the low-frequency bands, but this

• If you have had trouble using the MB-40SL as a grid tank circuit the simple modification described here should solve the difficulty. Included is a means of extending the coverage to 160 meters.

is greatly offset by the gain on the high-frequency bands.

Neutralizing

In the popular Breune neutralizing circuit, included in Fig. 1, the frame of the tuning capacitor is above ground. The original Faraday shield is grounded by a strap to the frame of the tuning capacitor, and therefore is above ground by a voltage equal to the neutralizing voltage. Removing the strap and grounding the shield directly to chassis ground eliminated erratic neutralization.

Paralleling the low-frequency section of the tuning capacitor with a 400- μ mf. mica capacitor permits operation on 160 meters. A ceramic wafer switch is used to remove this padder when not in use.

* Lihue, Kauai, T. H.