How would you like to have a knock-out punch on our lowest frequency band? You may already have the makings in your shack.

Adding 160 Meters To The Heath SB-220 Linear Amplifier

BY ROBERT G. EVANS*, K6QAY

While wanting to put more power than 60 to 70 watts available on 160 meters without a large expenditure, it was decided to attempt to add the low band to my Heath 220.

With no information available I decided to go it on my own. After experiencing many problems such as parasitic oscillations, failure of the final to dip, r.f. getting into the filament supply, burning out of the zener diode and meter lights, I decided to write this article so other interested hams could take advantage of the countless hours of work and avoid the frustration I have been through.

Since the 220 has a pi network input it was decided to drive the 160 signal through the 80 meter input. The pi network will pass frequencies below its resonant frequency. This eliminated the need to change the band switches and the addition of a 160 meter input coil.

It was felt that the drilling of one hole in the panel was justified, as the 160 meter feature can only add to the tradein value should you decide to upgrade at a later date.

You should add the changes to the schematic on page 87 of your manual and possibly add a copy of this article.

If you use your linear on 160 after sundown you must remember to reduce power in order to stay within the limitations for your area. You can reduce the input power by:

1. Reducing the exciter drive and
2. Reducing Mic gain, or as I do by separating the filament supply feeding the PRI of the filament transformer from the wall plug the PRI of the plate transformer from a variac voltage control.

Approximately 60 volts into the primary will place you into the 150 to 200 watt input range. Information on voltage control is included in this article. However, it is not necessary to the 160 m conversion. It may be plugged into the wall or a variac.

I hope you will have as many enjoyable hours with your linear as I have had with mine. If you follow the directions the conversion should take about two hours or less. Thanks must go to K6ZJ, W6JUT, W6FVW and W6FPV for putting up with me while I was testing this rig.

Instructions

1. Remove r.f. choke part #45-61 replace with a National R175 or equivalent.
2. Remove bifilar choke part #45-78, replace with B&W FC30A or make your own as I did from page 155 of the 1978 Radio Amateurs Handbook.*

*This choke may be obtained in kit form from Amidon Associates, 12033 Ostego St., N. Hollywood CA 91607. The filament choke kit [30 A, 1.8 MHz (part number FL-KT-33-7)] or the ferrite rod (part number 30-37-7) may be obtained separately.
Installation of the "80/160" toggle switch.

3. Install one each 15μF 600 volt capacitor across each of C22 and C23 at filament choke.

4. Cut wires from 80 m inductor L7 going to output line and variable capacitor C57.

5. Install 160 m inductor. B&W miniductor #3907 2" dia. ten turns per inch, 24 turns needed. Install above C55 and C57 secure to homemade angle brackets. Bolt to left hand perforated panel.

6. Install one each .00015μF mica 2,500 volt capacitor with a heavy lead to the RH tie bolt of the 250μF variable capacitor C55 at front panel.

7. Install one each .00075μF mica 2,500 volt capacitor with a heavy lead to the LH tie bolt of the 840μF variable capacitor C57 at front panel.

8. Install a 4 pole double throw toggle switch on front panel. Drill hole to clear switch 1" down from top of panel and 2" to the left of the plate meter. Also toggle switch part #406N Newark stock #61F878.

9. Connect the .00015μF to term. #9 and the .00075μF to term. #10 both with heavy wire. Install jumper between term. #5 and #6 run #5 to ground at left hand side of side panel.

Note: You might think breaking the gound of these capacitors is a mistake but it was done purposely to shorten the leads and pre-
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17. When you wish to tune any band other than 160, switch the toggle to the down position marked 80 and leave there.

18. This modification will not hamper the operation of any of the other bands.

19. If you use the voltage regulator system, do not allow drive to be applied without the place voltage being on, as damage to the 3-500Z's will result.

That's all there is. Have Fun.