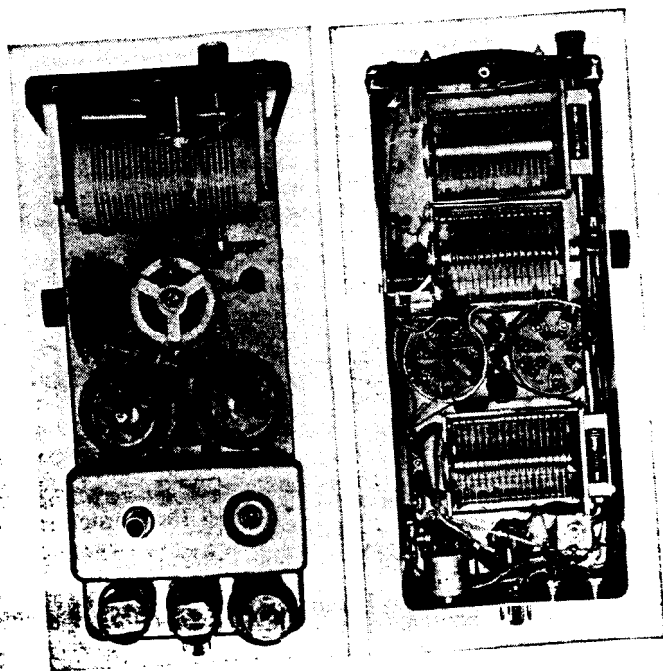


Fig. 1—Unmodified circuit of the BC 458A. (5.3 to 7 mc)

Another Approach To DSB Conversion Of Command Transmitters



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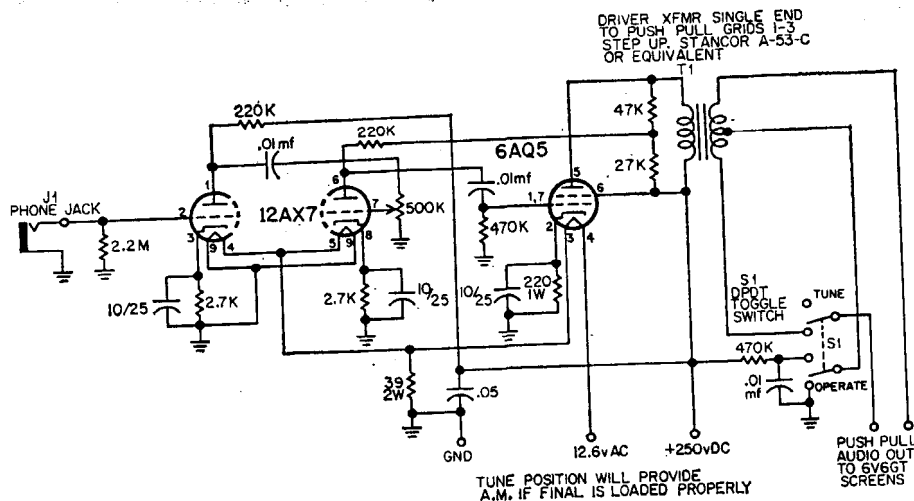


Fig. 3—Circuit of the speech amplifier and modulator.

A schematic diagram of the speech amplifier used is shown but no constructional details are given. If good construction practice is followed in building it, no difficulty should be encountered. A tune-operate switch is provided so that carrier might be inserted to tune the transmitter up. The "Tune" position of the tune-operate switch will also provide amplitude modulation.

Power Supplies

A word should be said here about power supplies. K9DBO's axiom in March 1959 CQ applies here also (quote) "Good signals require good power supplies." The voltage applied to the oscillator should be well regulated by the use of series VR tubes. For best results, separate regulator tubes should be used for the 1625 screens and the oscillator; although a common regulated source did provide a satisfactory operation. The plate voltage may be anything from 300 to 750 volts. The ARRL Handbook may be consulted for the correct bias voltage for linear operation of the 1625's.

Tune Up

Initial tune-up procedure is not too difficult but does require the use of a scope and preferably an audio oscillator. The scope should be connected to provide a two-tone test pattern. The transmitter should be loaded into a dummy load in the tune position and the added slug-tuned coil adjusted for maximum power output or cathode current. The tune-operate switch should be thrown to the operate position and a 400-1000 cycle audio note applied to the speech amplifier. The balance potentiometer should be adjusted until alternate lobes on the two-tone test pattern have equal amplitude. If an audio oscillator is not available, an alternate tune-up procedure is to couple the scope pickup loop tightly to the final tank. Turn the audio

control to minimum and apply voltage to the transmitter. If the scope has good sensitivity, a small amount of carrier will appear as the balance control is rotated to either extreme. The balance control should be set for minimum carrier amplitude on the scope.

This completes the initial tune up. The transmitter should now be loaded into an antenna and the scope pattern watched as you speak into the microphone. Only the higher voice peaks should tend to be clipped or limited in the final. If heavy clipping is present, the drive to the final should be reduced by detuning the slug-tuned coil between the modulator and final (this might bother some of the purists, but it works). Heavy loading should be used on the final. If low-plate voltages (300-500 volts) are used, you might have to add another link to the final coil. This can consist of two or three turns of wire wrapped tightly around the bottom of the plate tank coil. If oscillations are present in the final, it might be necessary to add another .02 mmf by-pass condenser on the bottom of the plate tank. This condenser may be soldered in parallel with the remounted condenser that was originally in the transmitter. Additional screen by-passing may also be necessary. The parasitic and oscillation problem seems to vary from transmitter to transmitter.

You are now ready to get on the air and enjoy the advantages of sideband. True, most stations will receive you as a single sideband station and this gives you a 3 db disadvantage compared to a single sideband station of equal power. But, at least, you have gotten rid of the chief heterodyne cause, the carrier. Most of the sideband boys will not know you are transmitting both sidebands unless you tell them. Stations as far as 1200 miles away were worked with the converted transmitters running a peak power of only 35 watts. So if you have been looking for a cheap way to investigate this sideband business, here it is.

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