

Forty-Meter Mobile With Your ARC-5

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The two units described below are published in order to augment the ARC-5/SCR-274 mobile conversion shown on page 55 of the "1952 Special Mobile Issue" (May).—Editor.

Receiver (BC-445)

As the receiver already covers the desired frequency range, its conversion is very simple. The basic modifications are very similar to those described in our original article. We added the tuning knob, the BFO switch, and the r-f gain control, as in the other units. However, in this unit we did not wire all the filaments in parallel, for operation on 12 volts. We merely substituted 6-volt tubes for the 12-volt tubes in the first four positions, as follows: 6SG7 r.f., 6K8 mixer, 6AC7 1st i.f., 6AC7 2nd i.f. We could find no simple substitute for the 12A6 which would work in series with a 6SR7. Therefore, we did connect these two filaments in parallel, and left the 12SR7 and 12A6 in place.

With the installation of the coaxial jack on the front panel, and the proper connections to the power plug on the rear, the modification is complete. We now have a very "hot" little receiver for forty meter phone or CW work. Even if you aren't interested in mobile work, it still is a valuable addition to a fixed station.

Transmitter (BC-458)

Now let's take a look at the transmitter. We could have made it very easy for ourselves and bought a 7-9.1 mc. transmitter in the first place. However, these units are more expensive for the obvious reason that they are useful for forty, so we purchased one of the 5.3-7 Mc units. With a very slight amount of work, in addition to the basic modifications, we can make this unit cover the desired frequency range and still make use of the calibrated dial.

The basic modifications, as in the 3.9-Mc unit previously described, consist of wiring the filaments in parallel for 12-volt operation, installation of two coaxial jacks on the front panel, removal of the old antenna relay and replacing it with the ceramic-insulated relay from below the chassis after modifying same, and installation of a plate current jack on the front panel. The final circuit diagram is the same as that of the 3.9-Mc unit, shown on page 58 of the May (1952) issue.

Now, for the frequency conversion. Remove the oscillator shield can, and loosen the set screws holding the rotor of the fixed padder condenser. Drill a $\frac{1}{4}$ " hole through the shield can so that the shaft can be turned with a screwdriver when the shield is replaced. Now go under the chassis and loosen the set screws holding the rotor of the fixed p.a. padder condenser. Remove two rotor plates from the variable oscillator tuning condenser, and likewise two rotor plates from the variable p.a. tuning condenser. On the oscillator coil, short the last turn at the top, by soldering a short across it at the lug where it ends. Now go counterclockwise from the lug and solder another short across the top turn at this point. Solder a short across the top turn of the p.a. coil at the lug where it ends. Now replace the oscillator shield can, and plug the transmitter into the rack in the car, or apply power to it by other means. Set the tuning dial at 6.0, and by means of a screwdriver through the hole in the shield can, adjust the oscillator frequency to 7.0 Mc. Quickly tune the p.a. to resonance by adjustment of the padder condenser beneath the chassis with a screwdriver. Plate current at resonance should be about 40 milliamperes as read on the meter in the cathode lead. Now turn the tuning dial to 6.1. The frequency of the transmitter should be 7.1 Mc. With the dial set at 6.2, the frequency should be 7.2 Mc., and at 6.3 on the dial, the frequency should be 7.3 Mc. If the desired spread is not quite right, it can be adjusted by means of the variable slug in the oscillator inductance, adjustable from the top of the shield can, and by variation of the trimmer condenser, also reached through the top of the shield can. However, if these instructions have been followed, the calibration should be very close over over the whole 7.0-7.3-Mc. band.

The antenna loading coil is wound experimentally and checked for resonance on 7.2-Mc., by means of a grid dip meter. With the antenna connected to the transmitter, the p.a. plate current should be about 100 milliamperes at full coupling. Recheck the p.a. resonance, and the oscillator frequency, under full load, before tightening the set screws on the padder condensers. The rotating antenna loading coil is left at zero for operation into coaxial feedline.

If desired, the 6-Mc. markings on the dial may be painted out and 7-Mc. markings substituted. However, this is not necessary if you just remember to mentally add one megacycle to the dial readings to obtain your operating frequency.



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