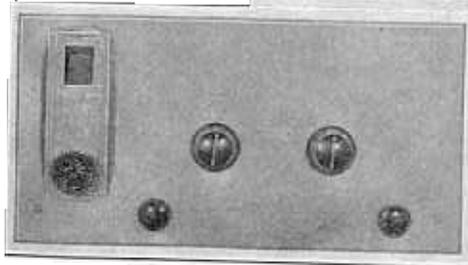
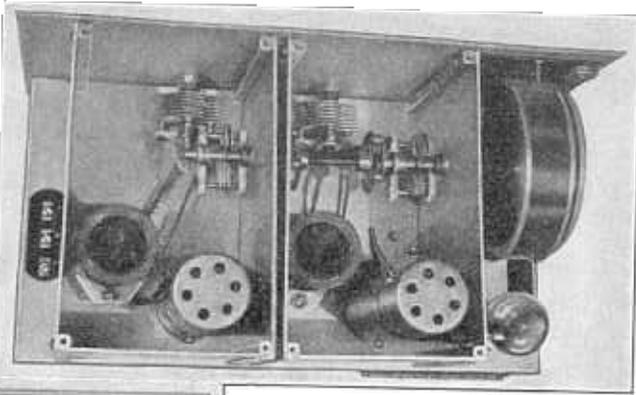


The Radio Amateur's Handbook

3-Tube Band- Spread A C Set



The receiver illustrated here represents a good example of such a set. It is a model constructed after the description which appeared in "The Radio Amateur's Handbook," tenth edition.

In the construction of this model there was some variation from the original, mainly in the method of obtaining regeneration. The original had the tickler in the cathode circuit and standard plug-in coils are not well suited to this arrangement. In the model described here, therefore, the circuit was changed to include the tickler in the plate circuit. No change was made in the method of controlling regeneration—a potentiometer to vary the voltage applied to the screen grid.

Referring to the schematic circuit of Figure 2, it will be seen that the r.f. stage is quite conventional in every respect. It employs a type -58 tube which is also self biased.

It is important that means for con-

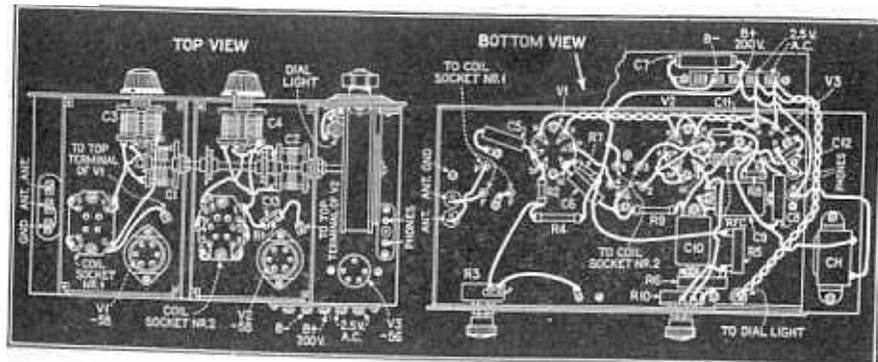


Fig. 1

trolling the gain of the r.f. stage be provided on the front panel of such a receiver as this. Otherwise even moderately strong signals will overload the detector. If the regeneration control alone were depended upon for this purpose the results would be highly unsatisfactory because in addition to detector overloading, there would be a distinct loss of selectivity when regeneration is retarded to reduce the volume. On the other hand, by controlling the gain of the r.f. stage, the input to the detector can be held down to a low level, full regeneration employed and thus maximum selectivity obtained.

The band-spread system employed provides continuous band-spreading by means of a small condenser shunted across the tank tuning condenser of each stage. These tank condensers are controlled by individual knobs. These may be seen as the two top control knobs in one of the accompanying photographs. The small band-spread condensers, however, are ganged for control by the single main tuning control at the left end of the receiver.

Not only does this system provide a very helpful degree of band spreading at any and all points throughout the range of the receiver, but it also provides single dial control within any band which has been selected by means of the tank condensers. Thus when the broadcast listener has tuned the tanks to resonance in the 25-meter broadcast band, for instance, he proceeds to tune in the individual stations in that band with the single main control, much in the same manner as he would tune in broadcast band stations on a modern broadcast receiver. The circuits will be found to track fairly well throughout the full rotation of the band spread dial, although some readjustment of the r.f. tank condenser will be required.

The model receiver shown here was built for use with Hammarlund standard plug-in coils and with the tuning capacities used, will cover the short-wave range from 19 to well over 200 meters, with adequate overlap, using 4 pairs of these coils.

The secret of using a tuned r.f. stage successfully, ahead of a regenerative detector, lies in providing thorough shielding. If shielding is inadequate there will be interaction between the two circuits to the extent that the tuning of one will react on the other and regeneration will be difficult to control.

This receiver is intended for operation from an a.c. power supply unit which will supply approximately 200 volts d.c. for the plates and 2½ volts for the heaters. Should it be desired to employ

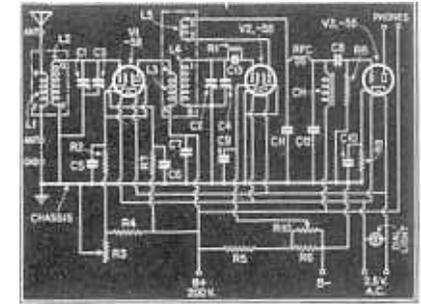


Fig. 2

B batteries, the voltage divider consisting of R5 and R6 may be eliminated and the "high" end of the potentiometer brought out to the 45-volt tap on the B battery.

The chassis is made from a sheet of 16-gauge aluminum, 17 inches by 11 inches. The edges are bent down 2 inches all around, making the deck dimensions 13 inches by 7 inches. The front panel is 13½ inches long by 7 inches high. The shield cans each measure 7 inches long, 4¾ inches wide and 4¾ inches high.

Parts List HAMMARLUND PRODUCTS

- C1, C2—Midget variable condensers, type MC-20-S
- C3, C4—Midget variable condensers, type MC-140-M
- L1, L2—Kit of 4-prong plug-in coils, type SWK-4
- L3, L4, L5—Kit of 6-prong plug-in coils, type SWK-6
- RFC—R.F. choke, type CH-X
- 1 Isolantite socket, 4-prong, type S-4
- 1 Isolantite socket, 6-prong, type S-6
- 2 Tube shields, type TS-50
- 2 Flexible couplings, type FC

MISCELLANEOUS

- C5, C6, C8—Cornell-Dubilier .01 mfd., 200v.
- C7—Cornell-Dubilier .1 mfd., 400v.
- C9, C10—Cornell Dubilier type HC-227 1.0 mfd., 160v.
- C11, C12, C13—Cornell-Dubilier .00025 mfd.
- CH—Thordarson audio choke, type T-2927
- R1—I.R.C. resistor, 5 megohms
- R2—I.R.C. resistor, 250 ohms, 1 watt
- R3—Electrad potentiometer, 10,000 ohms
- R4—I.R.C. resistor, 50,000 ohms, 1 watt
- R5—Electrad wire wound resistor, 15,000 ohms, 5 watts
- R6—Electrad wire wound resistor, 5000 ohms, 5 watts
- R7—I.R.C. resistor, 100,000 ohms, ½ watt
- R8—I.R.C. resistor, 5 megohms, ½ watt
- R9—I.R.C. resistor, 2000 ohms, 1 watt
- R10—Yaxley potentiometer, 50,000 ohms
- 1 National illuminated drum dial, type H
- 2 Eby laminated wafer sockets, 6-prong
- 1 Eby laminated wafer socket, 5-prong
- 1 Eby strip, 5-gang (screw terminals)
- 1 Eby strip, 3-gang (screw terminals)
- 1 Eby strip, 2-gang (tip jack terminals)
- 1 Aluminum chassis and 2 aluminum shield cans (see text).
- *All metalized type.