

140-WATT FINAL AMPLIFIER

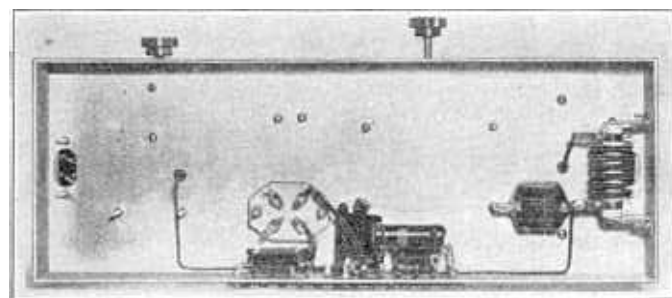
AFTER building the two transmitting units previously described, the experimenter will undoubtedly at some time or other desire greater power. This amplifier is capable of delivering approximately 140 watts of power and is designed to operate with the oscillator and buffer units already described. This unit, like the other two, is mounted on a metal chassis. Dimensions are 17" x 6" x 1½".

Starting from left to right, we have the plug-in grid coil with the "MC-100-S" tuning condenser in front of it. The 808 tube and the neutralizing condenser are located near the center of the chassis. Next, we have the "MTCD-100-B" variable condenser and finally the plug-in plate coil. The "CH-500" radio frequency choke coil is mounted underneath the

chassis. All connections, except where flexible leads are required, are made with No. 12 tinned copper wire.

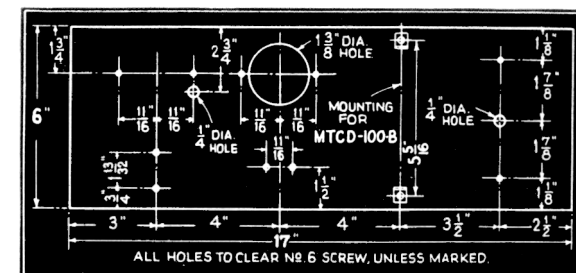
This amplifier, as well as the two transmitting units, previously described, have been taken from the A.R.R.L. Handbook but were constructed in the Hammarlund laboratories and given careful tests.

The grid coil is wound on Hammarlund SWF-4 receiving coil form with the turns spaced to a length of 1½". The turns used for the various amateur bands are as follows: 1.75 mc., 50 turns No. 24 D.S.C.; 3.5 mc., 25 turns No. 22 D.S.C.; 7 mc., 15 turns No. 22 D.S.C.; 14 mc., 8 turns No. 28 enameled; 28 mc., 5 turns No. 18 enameled. The link coil consists of two turns wound at the C-minus end of the grid coil. The plate coils used



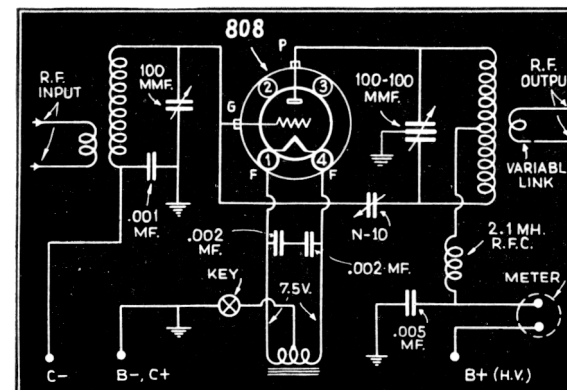
Bottom view showing placement of condensers, resistors, and R.F. choke.

Drilling specifications for amplifier chassis.



with this transmitter are standard Coto coils. However, data is given for those who may wish to construct their own: 1.75 mc., 70 turns No. 18; 3.5 mc., 34 turns No. 14; 7 mc., 22 turns No. 14; 14 mc., 10 turns No. 14; 28 mc., 6 turns No. 14. All coils are wound to a length of 4 inches with a diameter of 2¾ inches. The antenna is coupled by a link consisting of three or more turns wound inside the plate coil. Other methods of coupling of course may be used and depend to a great extent upon the antenna system employed.

Tuning and adjusting the amplifier is the same as in all other amplifiers of similar design. When coupled to the oscillator, the first operation is neutralizing. This is accomplished by connecting a 0-100MA. meter in the grid circuit of the 808. With the B-plus connection removed, adjust the grid tuning condenser for maximum grid current. Next, adjust the neutralizing condenser for widest spacing. Then rotate the plate tuning condenser slowly until a point is reached where there is a decided dip in grid current. Next, adjust the neutralizing condenser by moving the plates



Parts List

- HAMMARLUND**
- 1—MC-100-S midget cond.
 - 1—N-10 neutralizing cond.
 - 2—S-4, 4-prong sockets
 - 1—CH-500 R.F. choke coil
- I. R. C.**
- 1—3,500 ohm 10 watt resistor
- AEROVOX**
(cond.)
- 2—.002 mf. mica 2500 volt
 - 1—.001 mf. mica 1,000 volt
 - 1—.001 mf. mica 5,000 volt
- COTO COIL**
- 1—Mounting base with coils to cover the bands desired.
- R. C. A.**
- 1—808 power tube.
- MISC.**
- 1—17" x 6" x 1½" aluminum chassis
 - 2—Knobs
 - 2—2-point terminal strips
 - 2—5-point terminal strips

closer together and at the same time swing the plate condenser back and forth across the point where the dip occurred. Continue this procedure until no fluctuation in grid current is noticeable when the plate condenser is tuned through resonance. The plate condenser should be left at the setting where the dip occurred. Then, apply the plate voltage and adjust the plate condenser for minimum plate current. This should be around 15 or 20 ma. The antenna can now be coupled to the amplifier and it can be loaded to approximately 125 ma. If the power supply, described later on in this book, is employed the output will be approximately 110 watts. Up to 1500 volts may be employed with corresponding increase in output, the maximum being approximately 140 watts.