

HIGH FREQUENCY RECEIVER

TYPE RHM

MADE BY

NATIONAL COMPANY, INC.

MALDEN, MASSACHUSETTS

OPERATING INSTRUCTIONS

FOR THE

TYPE RHM RECEIVER

TUBES. Nine tubes are required for this receiver, exclusive of the power pack, as follows:

R. F. Amplifier	236	1st Intermediate Amplifier	236	Automatic Volume Control	237
1st Detector	236	2nd Intermediate Amplifier	236	Audio Output	238
High Frequency Oscillator	237	2nd Detector	237	C. W. Oscillator	237

The positions of the various tubes are shown in the attached plan of the receiver.

It is understood that in order to secure best results, tubes of recognized quality, having average characteristics, should be employed.

POWER SUPPLY. The receiver is designed for use with either the NATIONAL Type GRDPU double power supply or Type 5886AB single power supply. These units employ a series of R. F. filters for the removal of line noises, so-called "tunable hums", and similar disturbances, in addition to a carefully balanced filter for the eliminator of 60 and 120 cycle ripple.

The receiver heater supply requires 6 volts at 2.7 amperes and the B supply 170 volts at 35 milliamperes. Connection to the supply unit is made by means of a cord and standard 4-prong plug.

ANTENNA. The antenna dimensions are not at all critical, but an antenna of average dimensions is desirable.

OUTPUT CIRCUIT. Provision is made for either headphones or loud-speaker operation by means of two sets of output terminals, located at the rear left-hand corner of the receiver chassis.

The speaker input circuit is connected directly in the 238 plate circuit, while the 'phones are coupled by means of a condenser and choke, which removes all D. C. potential.

CONTROLS. From left to right, the controls on the front panel are: the Intermediate Frequency Beat Oscillator Switch; Selector Switch for Manual or Automatic Volume Control; the Main Tuning Dial; Volume Control; Selector Switch for Phones or Loudspeaker.

For receiving telephone or modulated c. w. signals, the beat oscillator switch is turned to "Phone", with the volume control selector switch in either position desired. When turned to the "MVC" position, the volume control is used to regulate the sensitivity or gain of the receiver. When the switch is turned to "AVC", all signals will be held to a constant output level (within limits) with the volume control turned to the extreme right. When receiving exceptionally strong signals, the manual volume control may be used to reduce the gain.

For continuous wave reception, the beat oscillator switch should be turned to the "CW" position and the volume control selector switch must be in the "MVC" position, since the automatic volume control tube is practically inoperative when the beat oscillator is in use.

INTERMEDIATE FREQUENCY AMPLIFIER. The intermediate frequency amplifier is tuned to a frequency of 600 k. c., tuning being accomplished by means of the condenser adjusting screws located at the top of the intermediate frequency transformer shields.

In aligning the amplifier, a signal generator may be coupled to the first detector grid circuit and an approximate alignment obtained with the volume control selector switch in the "MVC" position with the beat oscillator switch turned to "Phone". Final alignment should be made with the switch in the "AVC" position, using a very low signal output level in order to avoid automatic volume control tube action.

The selector switch is next turned back to the "MVC" position and the compensating condenser adjusted through the hole near the middle of the chassis bottom. At low signal levels there should be no difference in sensitivity with the selector switch in either the "AVC" or "MVC" position.

BEAT OSCILLATOR ALIGNMENT. After the intermediate frequency amplifier is properly aligned with the selector switch in the "MVC" position, the beat oscillator switch should be turned to the "CW" position and the tuning condensers adjusted until zero beat is obtained with the signal. Either of the two adjustment screws of the beat oscillator coil unit may be used for tuning.

Under some circumstances it may be advisable to tune the beat oscillator to give a beat of 1000 cycles or thereabouts, for, under these conditions, one side of the carrier will be considerably louder than the other with a consequent reduction in interference from station carriers which overlap.

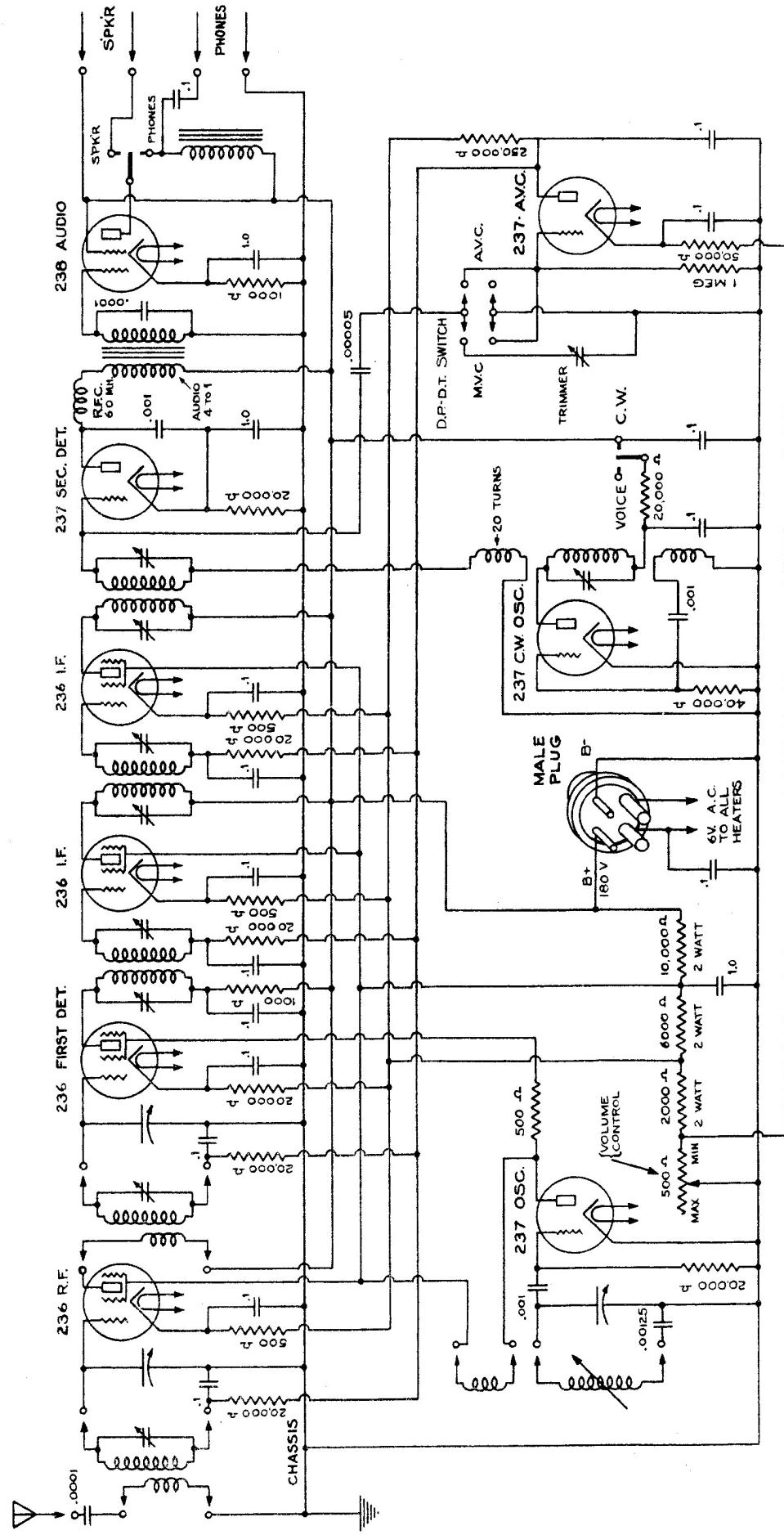
R. F., 1ST DETECTOR AND OSCILLATOR ALIGNMENT. Alignment of these circuits is accomplished by coil adjustments which are accessible through holes located directly below the coil handles. The frequency to which the receiver will respond is governed by the oscillator tuning.

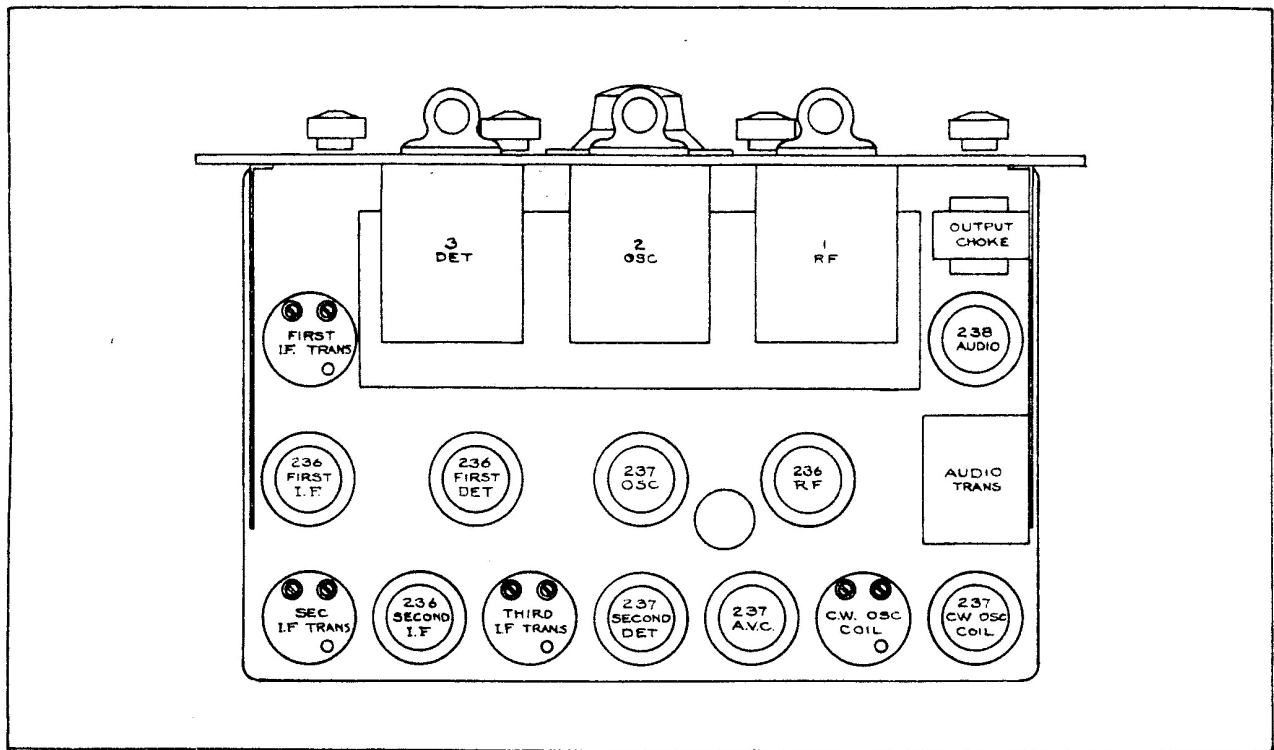
The oscillator operates on the high frequency side of the signal; that is, the oscillator frequency will equal the signal frequency plus the intermediate frequency. The oscillator coils (No. 2) are adjustable over a limited range, by means of an inductive trimmer, which is set so that the receiver will respond approximately in accordance with the coil tuning chart.

R. F. and detector circuits are adjusted when a signal generator is coupled to the antenna post.

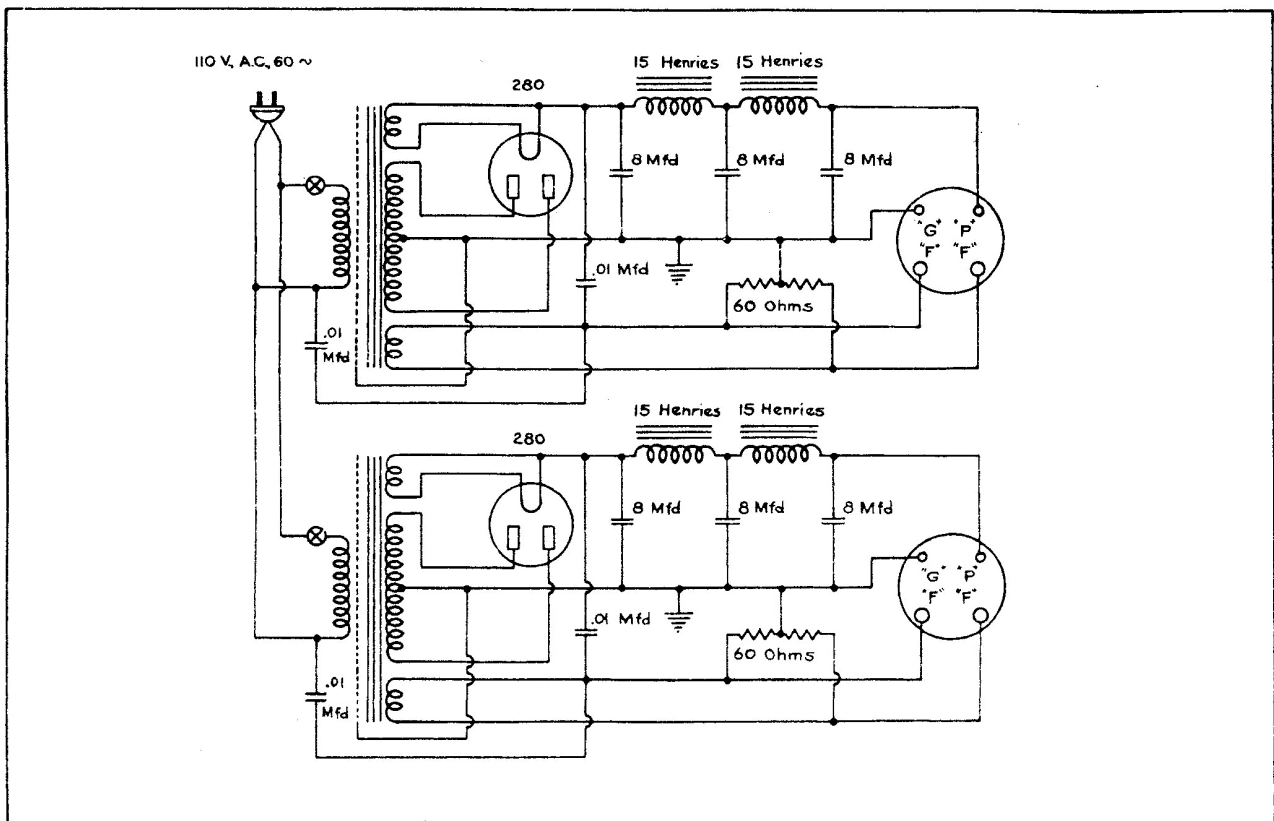
If the antenna employed has characteristics differing considerably from average, it is advisable to readjust the R. F. coils (No. 1).

SCHEMATIC DIAGRAM TYPE R.H.M. RECEIVER





TUBE LOCATIONS - PLAN



DUPLEX POWER UNIT - GRDPU