The amplified audio signal is coupled to the audio output stage and, in turn, through the audio transformer to the speaker terminals. The secondary winding of the audio transformer is designed to match a 3.2 ohm speaker such as the matching NTS-3 table speaker. The output signal is also coupled to a shorting type phone jack on the front panel.

PHONE JACK

The head phone jack is located on the front panel and will accept any normal 2 circuit phone plug. There is no DC voltage associated with the head phone circuit. Because of the low impedance of the audio transformer secondary almost any type of head phone may be used with completely satisfactory results. Insertion of a standard phone plug will break the loudspeaker circuit and silence the speaker.

The "S" meter is connected in a bridge circuit between the plate decoupling resistors of the first and second IF stages. AGC voltage is applied to the first of these stages so that the change in plate current will cause the "S" meter to read relative signal strength.

"S" METER

Normal adjustment of the "S" meter is readily accomplished by disconnecting the antenna and increasing the RF gain control to maximum sensitivity which corresponds to its extreme clockwise setting. The receiver should be tuned so that only background noise is heard and the antenna trimmer peaked. The "S" meter zero adjust control should then be adjusted to achieve a reading of approximately S1 on the incoming noise level. This will assure proper "S" meter reading. When properly adjusted, an "S" meter reading of S9 will correspond to approximately 50 microvolts of signal at the antenna terminals.

The power supply of the NC-190 receiver is a conventional transformer operated circuit using a full wave rectifier with suitable filter and shunt feed to the voltage regulator tube. The regulated voltage is used for all receiver oscillators to assure maximum stability. A standby-receive switch is used to remove power from plate and screen of most tubes for standby operation.

STBY-REC SWITCH

The Standby-Receive switch is a two position toggle switch which may be set to standby to mute the receiver or placed in the receive position for normal operation. An auxiliary pair of terminals on this switch is connected to the rear relay terminals in such a manner that the rear relay terminals are open circuited in the receive position and short-circuited in the Standby position. This allows control of an external relay circuit by means of the Standby-Receive switch. If the Standby-Receive switch is left in the Standby position, the receiver can be operated by shorting terminals 4 and 5 of the calibrator socket, thus providing for external control of the receiver.

A crystal calibrator socket is provided on the rear apron to accept the accessory XCU-109 crystal calibrator. The front panel calibrator switch is provided to turn the accessory calibrator on and off.

CRYSTAL CALIBRATOR

When the accessory XCU-109 calibrator is plugged into the receiver and the front panel calibrator switch is turned on, a signal will appear at every 1 megacycle point on the main tuning dial. As discussed in the sections on tuning, the main tuning dial will read correctly only when the bandspread dial is set to proper position. The 1 megacycle signals may now be used to check the accuracy of the main tuning dial. In the event that the 1 megacycle signal does not appear exactly at a 1 megacycle point on the dial, the bandspread dial may be slightly rotated to move the 1 megacycle signal to exact position on the main tuning dial. In like manner, the main tuning dial may be moved slightly from a set point to assure accurate calibration of the bandspread dial. It is sometimes convenient to turn on the beat frequency oscillator in order to add tone to the calibrator signal so that it may be more readily located.

A separate bottom cover and cabinet top are employed for ease in servicing and the National Radio Company patented Flip-Foot has been added for operator convenience.

CABINET

The Flip-Foot is easily elevated into the raised position or dropped back to the flat position for maximum operating ease. To elevate the Flip-Foot, lift the forward portion of the cabinet, reach under and pull the rear edge of the Flip-Foot down and forward until it reaches its upright position. To remove the top half of the cabinet it is necessary to remove the two screws on the lower forward corner of each side of the cabinet and the two screws at the lower outside corners of the back. Then remove the cabinet top by lifting and springing the front top lip of the cabinet free from the retaining clips attached to the panel. The cabinet is replaced by reversing this procedure, taking care to engage the slots in the forward lip of the cabinet into the two clips welded to the rear of the top section of the panel. The bottom cover of the receiver may be removed by removing the two rear mounting feet and by removing the four retaining screws. The bottom cover may then be slipped to the rear removing it from under the Flip-Foot, allowing free access to the wiring of the receiver.