

Headphone connections are also made to the 4 ohm tap. When the headphones are plugged into the headphone jack J-1, the speaker is disconnected and a 10 ohm loading resistor is connected across the 4 ohm winding in parallel with the headphones to load the 6AQ5.

4.5.8. 148C-1 NARROW BAND FREQUENCY MODULATION ADAPTOR - The Model 148C-1 NBFM adaptor employs a type 6AU6 tube as a limiter and a type 6AL5 tube as a frequency discriminator. The limiter tube provides constant input to the discriminator tube due to the high value of grid load resistance (R201). The discriminator circuit used in this adaptor relies on the phase difference between primary and secondary in coupled circuits. A 90° phase difference exists between the primary and secondary potentials of a double tuned, loosely coupled transformer when the resonant frequency is applied, and this phase angle varies as the applied frequency varies. The potentials at either end of the secondary winding with respect to a center tap on that winding are 180° out of phase. When the center tap of the secondary is connected to one end of the primary, the potentials between the other end of the primary and each end of the secondary will reach maxima, one above and the other below the center frequency. At the center frequency, the resultant difference of potential between the two is zero. These potential differences vary at audio frequency rate when a frequency modulated signal is applied to the discriminator input. The audio frequency voltage is taken from the diode load resistors and sent through a de-emphasis network, R208 and C208, to pin number 2 of the power plug P203. The unit is ready to operate at all times by merely throwing the CW-AM-FM control on the 75A-2 Receiver to the FM position which disconnects the AM detector and substitutes the FM adaptor. The regular receiver audio circuits are used for FM reproduction. Operating voltages are provided by the receiver.

4.5.9. 8R-1 CALIBRATOR UNIT - The 8R-1 Calibrator Unit uses a type 6BA6 tube in a Pierce circuit. A 100 kc crystal is used to give check harmonics at every 100 kc spot on the receiver dial. Capacitor C-301 is provided for zero beating the calibrator output with a known frequency standard such as a broadcast station in the tuning range of the 160 meter band or WWV at 2.5, 15 and 30 mc. The calibrator receives its operating voltages from the 75A-2 Receiver power supply and is turned on when the LIMITER control on the 75A-2 Receiver is placed in the CAL position. The output of the calibrator unit is coupled to the grid of the r-f amplifier tube V-1 through the capacity between pins 3 and 4 of crystal calibrator socket E-5.