

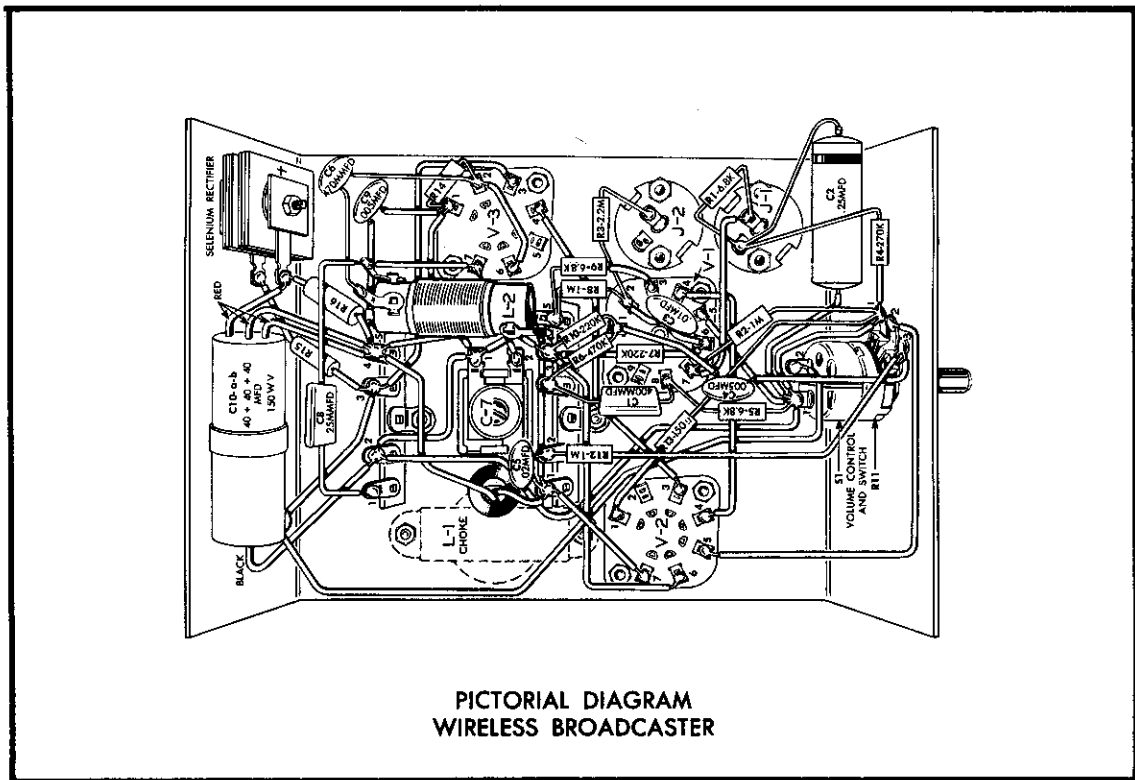
Knight-Kit Wireless Broadcaster

THE Wireless Broadcaster transmits modulated radio signals in the broadcast band, acting as a miniature broadcast station with limited range. It permits the playing of phonograph records or the making of "radio" announcements through a radio set without the necessity of direct connection to the set itself. The carrier signal is adjustable to a point on the dial of the radio where no broadcast station is heard. Either a crystal, ceramic or magnetic phono pickup may be used for playing records through a radio up to 50 feet away.

The Wireless Broadcaster has three basic stages: the power supply, the radio frequency generator or oscillator, and the audio amplifier or modulator. The power supply consists of a selenium rectifier and a capacitance-resistance filter network. The function of the power supply is to convert the 60 cycle AC line voltage to the DC voltage necessary to operate the modulator and oscillator stages. The tube filaments obtain their operating voltage direct from the line.

The oscillator produces a radio frequency signal which is radiated by the antenna. This radiated signal is called the oscillator output or the carrier. The carrier may be tuned in on your regular AM radio just as you tune in any regular station. By adjusting the frequency control capacitor the oscillator may be tuned to any frequency between 600 and 1600 kilocycles. The carrier frequency should be adjusted to a frequency not used by regular broadcast stations. When your radio is tuned to the carrier frequency a "hissing" or "rushing" will be heard. A "whistling" indicates close proximity to a regular station.

A phono pickup or a microphone connected to the proper input jack feeds a varying voltage to the modulator. This varying voltage is an audio frequency which is amplified by the modulator, then superimposed on the carrier. Combining audio and radio frequencies in this manner is called "amplitude modulation" or AM. The resultant frequency is a "modulated carrier".



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The voltage drop of all the tubes connected in series is 112.6 volts. A 27 ohm resistor is used to bring the total drop to approximately 117 volts permitting operation from 110-120 volts DC or 50-60 cycle AC. A selenium rectifier connected as a conventional half-wave rectifier is used in the power supply.

A dual-triode type 12AX7 and a 50C5 beam pentode are used in the modulator. The 12AX7 serves a dual function in that one or both triodes can be used, depending upon the amount of amplification needed. High output crystal or ceramic phono cartridges can be connected to the input jack of the second triode. Magnetic phono cartridges such as G.E. or Pickering should be connected to the input jack of the first triode. This triode provides additional amplification needed for these low output cartridges. The 400 mmfd capacitor and the 470K ohm resistor between the cathode of the first triode and the plate of the second triode furnish the necessary equalization for magnetic cartridges. These two components plus the 6800 ohm resistor in the grid circuit of the first

triode can be removed if a crystal or high impedance magnetic microphone is to be used. The output of the 12AX7 is coupled to the 50C5 modulator which operates as a class A amplifier. Here the audio signal is amplified to the level required for full modulation. A volume control is provided to control the modulation level. The .02 mfd capacitor and the 1 megohm resistor between the plate of the 50C5 modulator and the volume control provide feedback which reduces distortion of the modulator output and improves the quality of the transmitted signal.

The 50C5 oscillator is triode-connected in a tuned-plate tuned-grid oscillator circuit. The 5.5 henry choke is the plate load of the modulator and as it is also in the plate lead of the oscillator it modulates the output of the oscillator. Notice the plates of both the oscillator and the modulator are fed through this choke. This is called Heising modulation.

An antenna wire approximately 10 feet long will give excellent results. Any insulated wire may be used. The Knight-Kit Wireless Broadcaster is listed in the kit section of the Allied catalog.