

RANGEMASTER TONE RIGS CONFORM TO LATEST RULES ON "27" SPOTS

■ Two units of a complete new line of Rangemaster R/C equipment marketed by Polk's Model Craft Hobbies (New York 1, N. Y.) will be described here—the TRR receiver and 2AP transmitter. This equipment is intended for use on the 27 mc frequencies, and the transmitter comes equipped with a 27.255 mc crystal.

The TRR receiver is a tube and transistor set, the tube being used as a super-regen oscillator or detector, with transistors in all other stages. It will respond only to a tone signal with a frequency from 400 to 600 cycles, and the transmitter should be at least 75% modulated. The TRR is especially designed to work with the Rangemaster 2AP transmitter. Built on a printed circuit base plate, the receiver is completely enclosed in a rugged plastic protective case. Its cover is held on by four machine screws, threaded inserts in the case receive them.

As will be seen from the circuit, the conventional 1AG4 detector is followed by a pair of direct-coupled transistors, which in turn are transformer-coupled to the relay transistor. The operation of the receiver can be checked with a milli-amp meter in the B plus lead, or you can use headphones connected to a lead brought out through the power cable.

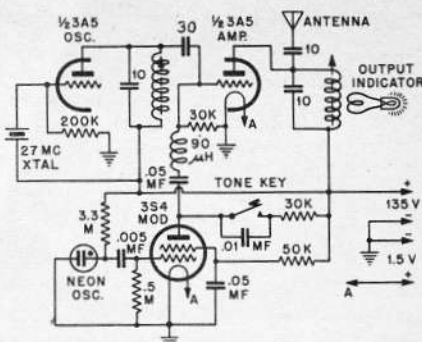
There is only one adjustment on the receiver, for tuning; it is fitted with a locking device so that it can be turned when desired but will not shift due to vibration. The power cable ends in a neat plastic 7 pin miniature plug with screw-on cap. Besides the usual battery wires, the cable also includes the head-phone connection and three relay leads. To prevent possible cross connection with other circuits in the model, all relay leads are kept separate from those connected to the receiver circuitry. Both relay contacts are brought out, for use on motor driven servos or proportional setups.

The tiny "Genie" relay used in this set is adjusted to operate at 1.8 ma and open at 1 ma.

The rear of the case, entirely flat, is ideal for cementing to a foam rubber or plastic shock absorbing pad. As with most tube-transistor receivers, this one requires that both the "A" and "B" battery circuits be opened when the set is not in use. This is a valuable safety precaution as one is less apt to cause a damaging short when working on the equipment in a model.

The Rangemaster 2AP transmitter is

**Rangemaster TTR Receiver
at right-top, circuit below.
Transmitter at right—below.**



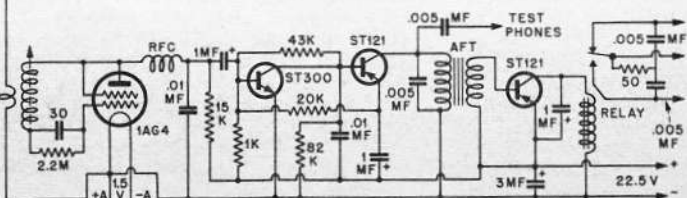
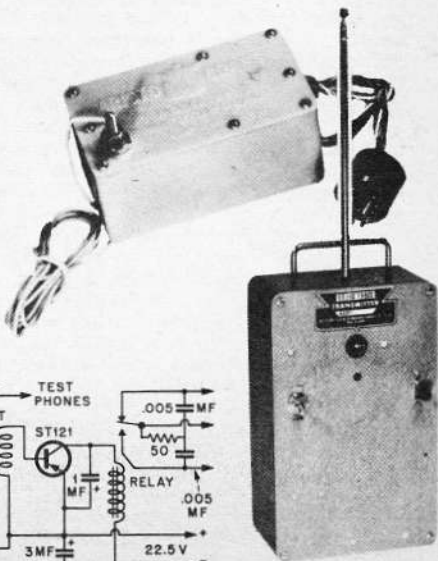
Rangemaster 2AP transmitter circuit.

very similar in size and RF circuit to the 1AP CW receiver, but has an added modulation circuit. The 2AP has a bright yellow protective case, as has the matching TRR receiver, to distinguish them from the similar appearing CW transmitter and receiver. All parts except the keying switch and battery holders are mounted in an enclosed metal sub-chassis, with only the two tubes and the crystal above deck. Because of this shielding there is very little radiation from the transmitter unless the antenna is plugged in. The key has three positions; center is off and to key the tone on you flick the lever upwards. An additional position is had when the lever is moved downwards, but here it will hold till you release it. Handy for field testing when you are all alone!

A spring holder is provided for the A cell; the two B batteries are retained vertically by a metal frame. The antenna has a threaded lower end and is simple to insert through the top of the case.

Since it is no longer legal to tune most R/C transmitters, no instructions are given for this operation, but the receiver instructions are quite complete. It was found that the bulb output indicator brightened greatly when the tone key was operated. The transmitter may be used for short range checks with the antenna collapsed, with no damage to components.

SPECIFICATIONS: Rangemaster TTR receiver, for 27 mc tone signals. One tube and three transistors. Case 1 1/2 x 1 1/4 x 2 3/4" long. Weight with cable and plug, less socket, 3.15 oz. Antenna length not critical; 28" antenna furnished. Single adjustment, for tun-



ing. Cable has 7-pin miniature plug (matching socket included). *Power Supply*: A battery, 1½ volts at 45 ma; B battery, 22½ volts; .8 ma current with no signal, drops slightly with CW carrier, goes up to 5½ ma with proper tone signal.

Rangemaster 2AP transmitter. All components fastened to metal panel, with plastic protective case on back. Case is 3 x 5 x 8" high. Toggle switch for on-off. Three position lever switch for keying tone. Single 3A5 used as 27 mc oscillator and power amplifier, with neon bulb audio oscillator and 3S4 modulator tube. Weight with all batteries and antenna, 3½ lb. Six section antenna projects 8" above case top when
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collapsed, 46" when extended. 27.255 mc crystal is standard. Output indicator bulb projects through panel. *Power Supply*: Single D size flashlight battery for filaments, 1½ volts at 320 ma. B battery, 135 volts (two Eveready 467 batteries in series, or equiv.). Current drain, 15 ma with CW signal, 19 ma with tone on.

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nylon thread here because it gives too much.

The finished tail boom assembly is not glued to the cabane struts. It is rubber banded on. The wing is then banded to that.