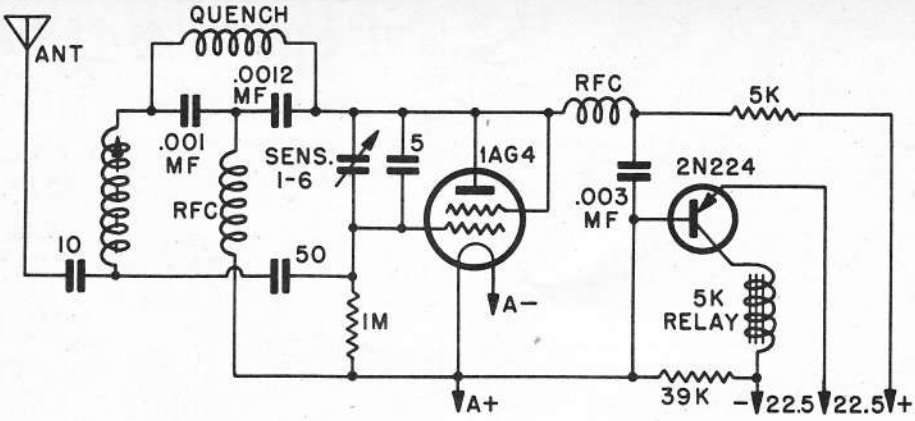
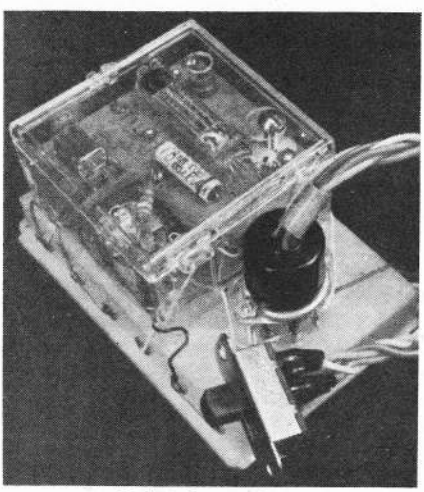


WORLD ENGINES MARKETS CONTROLAIRE R/C UNITS

■ Back in the June '55 issue of *Air Trails Hobbies* we described the SM-1 radio control receiver then being sold under the Controlaire name by Jack Port. Jack still operates under the same name but his R/C equipment is now distributed and exclusively marketed by World Engines (Cincinnati 42, Ohio). The SM-2 received is a direct outgrowth of the SM-1 and in fact uses very much the same circuit. However, the latest version has a transistor amplifier and is built in sandwich form, between two layers of phenolic sheet. The bottom sheet is completely clear on the outside and can be used to cement the receiver to foam rubber in your model.

The receiver utilizes a single tube in the so-called "hard tube" circuit, which offers a means of adjusting sensitivity to any desired degree. To obtain the correct sensitivity adjustment the makers strongly recommend what they call the Reflection Tuning method. This requires the use of a hand-held transmitter (ground type could be used but is not as convenient) of the power oscillator type—in other words, an MOPA will not work. To use this method, you simply turn the receiver on, leaving the transmitter switch *off* and bring the transmitter antenna near to that of the receiver. When they get very close together, the receiver will act as though it is receiving a signal (which indeed it is) and the relay will "clack" in.

This is no black magic! Super-regen receivers act as very low power miniature transmitters; when you bring receiver antenna and that of transmitter close (6" to a foot) the receiver signal is picked up by the transmitter crystal, which in turn sends out its own weak signal on the same frequency. This signal triggers the receiver. Naturally, Controlaire recommends their own transmitter for this method, and gives specific information on distances between the two antennas, for proper results. With other makes of transmitters you will have to work out your own procedure.



Club-Pak receiver.

Directly coupled to the tube output is the transistor relay stage. The transistor operates on 22½ volts, but the tube requires 45, so two 22½ volt units are required. Due to the high current change through it the relay closes with a real whack, on signal.

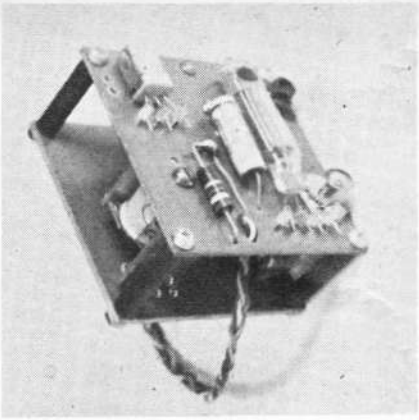
A year or so ago, Controlaire brought out a complete wired and assembled receiver installation, which included the SM-2, a battery case to hold the two 22½ volt batteries and also four pencells, for filament and escapement power. This unit even had an On-Off switch ready-wired, so all you had to do to make the model installation was cement the battery case cover down and attach the two loose wire ends to your escapement. This unit has been further improved and is now included in the World Engines line as the Club-Pak. Radio-wise it is the same as the SM-2, but the receiver is enclosed in a plastic case cemented atop the battery box. At one end is a 7-pin socket.

The entire receiver and battery case assembly may be removed from the model without disconnecting any wires; the 7-pin plug, attached to the switch and escapement remains in the model. Thus, the same receiver may be shifted from one model to another at will. World Engines can supply at low cost the extra switch and plug units, plus extra battery case top which remains in the model and forms the "slide" that holds the outfit in place.

An extremely complete and detailed Instruction Booklet is packed with each receiver. It has 20 pages of small type and should be studied most carefully before using the equipment.

Specifications: Controlaire SM-2 receiver for 27¼ mc. Single hard tuber with transistor relay amplifier. 1AG4 tube and 2N224 transistor. Two variable controls, for Sensitivity and Tuning. Sub-min OS relay. Overall size, 2" square x 1¼" high. Weight, 1¾ oz.

Battery Requirements: For escapement use, two Burgess Y-15 batteries may be used; for pulse work, use two U-15 batteries. Pencells supply 1½ volts at 45 ma for the tube filament. Idling current is about .7 ma. in the tube



Controlaire SM-2.

(relay idles just about zero). With signal, relay current rises to 4½ ma, tube current drops to about .25 ma. Club-Pak receiver identical, but total weight of entire installation is about 4 oz. (less batteries and escapement).