

## ALL-TRANSISTOR RECEIVER AND TRANSMITTER BY MIN-X; REED UNIT CAN BE COUPLED TO RCVR

■ Among most recent entries in the R/C manufacturing field is Min-X Radio (Detroit, Mich.). Their first products were an all-transistor tone receiver and a tone transmitter to match. Both units, packaged in attractive gold-anodized aluminum cases, are built up with printed circuit bases.

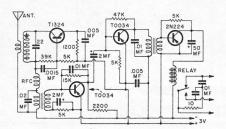
The receiver, intended for 3 volt operation, was designed to produce very rapid response to keying, so it is ideal for proportional control and such escapement uses as quick-blip engine operation. As is the case with all such low voltage receivers, the relay is set up with very heavy spring tension (relative to that used on the usual high resistance sensitive relays), and really clacks in when a tone is received. It is often possible to fasten the receiver in a model without shock mounting, but this is not recommended, as a rough engine or unbalanced prop could cause trouble.

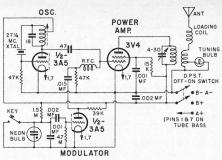
Antenna length is not fussy, but at least 22" in suggested, with the notation that longer antennas will enable better reception. When tuning up the receiver, a very low resistance meter must be used; the range should be at least 0 to 50 ma, and 0 to 100 ma is even better, as the latter will probably have lower resistance. Only a "moving-coil" meter should be used as this type has lower internal resistance than less expensive types of milliammeters.

milliammeters.

There is only a single adjustment on the set—that for tuning. The slug in the tuning coil takes a hex-ended "tuning stick," not a screwdriver.

Knowing that many modelers wish to get into multi-control flying, after having tried single channel for awhile, Min-X has a neat gimmick up their sleeve. A kit will allow conversion of the present





receiver into a multi-reed job; present relay is removed from chassis and tiny reed unit goes in its place. Another case then holds all the relays and associated circuitry, and 8 channel will be offered, with other numbers of reeds optional.

The Min-X tone receiver uses a 3A5 tube, half serving as crystal oscillator, the other half as a modulator. AF tone is generated by a neon bulb. RF power amplifier is a 3V4 tube. As with most tone transmitters, this one emits a continuous RF signal, and tone modulation is applied when you press a button. A bulb on the transmitter serves as output indicator, and to aid in tuning. Both transmitter and receiver will cover the full range of R/C spot frequencies from 26.995 to 27.255 kc.

While the receiver is designed for use on 3 volts, if operated in temperatures below 40 degrees,  $4\frac{1}{2}$  volts may be used, but voltage should never be higher than this value.

MIN-X 27¼ MC TONE RECEIVER: Contained in two piece case measuring 1 x 2 1/16 x 2 5/16" and weighing 2.6 oz with cable and plug (7-prong socket is furnished). Circuit utilizes four transistors; low resistance Jaico relay is used. Single adjustment only—for tuning.

Battery Requirements: 3 volts (two pencells suggested) except in very cold temperatures, when 4½ volts should be used. Current with no input signal, about 10 ma. With CW signal, 4 ma. With 80 to 100% modulated tone (from 300 to 1000 cycles), about 30 ma. Can be tuned with low resistance ma meter (50 or 100 ma range) or with high impedance phones.

MIN-X 27¼ MC TONE TRANS-MITTER: Hand held unit in case 3 x 5½ x 7½"; antenna (supplied) projects 33½" from top of case. 27.255 mc crystal supplied. Front of case has on-off slide switch, click-type keying button and monitor bulb. MOPA type circuit with



American Modeler - August 1959

separate audio oscillator and modulator tube sections.

Battery Requirements: "A" supply.

single 1½ volt battery (Eveready 742 or equivalent), about 300 ma current drain. "B" supply, two 67½ volt batteries (Eveready 467 or equiv.), 135 volts. Current with no tone about 21 ma; with tone button depressed, 18 ma. It is

volts. Current with no tone about 21 ma; with tone button depressed, 18 ma. It is normal for light bulb to dim slightly when tone button is operated. B batteries should be replaced when they read 100 volts or less under load.