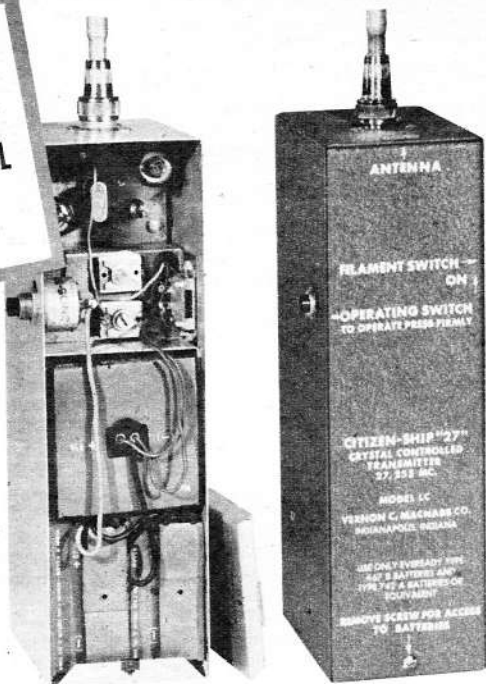




CITIZEN-SHIP "27"



Specifications

■ **Receiver**—Model No. LR. Overall size, $3\frac{1}{4}'' \times 1\frac{3}{4}'' \times 2\frac{1}{2}''$ high. Weight with tube (relay is built in)—4 oz.

Batteries required: A—1.5 V. at 100 ma. B—60 or $67\frac{1}{2}$ V. Current without signal, about 1.5 ma (with 60 V. on plate); with signal, .5 ma. or less. Lightest recommended battery complement (two pen-cells and two 30 V. hearing aid B's)—4 oz.

Adjustments: one for tuning, one for sensitivity. Meter jack required on model, but no rheostat. Antenna—about 18-22" long. Relay has screw adjustments, quench coil has adjustable core; both are set at factory, seldom need resetting.

Transmitter—Model No. LC. Case is $9'' \times 2\frac{7}{8}'' \times \frac{1}{8}''$ overall; switches and antenna connections project slightly more. Case is steel, gray crackle paint on outside, yellow protective coating inside. Weight with antenna and all batteries—5 lb. 6 oz. Antenna is three section aluminum tubing, $46\frac{1}{2}''$ long.

Batteries: A— $1\frac{1}{2}$ V. (Eveready 742 or equiv.) at 200 ma. B—135 V. (two $67\frac{1}{2}$ V. units, Eveready 467 or equiv.), key-down drain about 17 ma. No B current drawn when key is up.

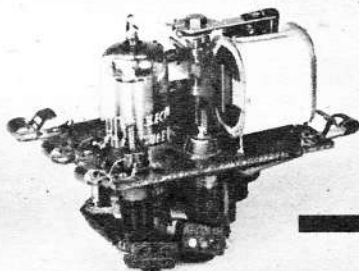
Controls: On-Off slide switch and push-button. Four screw adjustments inside case—normally need adjustment only when crystal or tubes are changed.

General Information. This equipment is intended for the Citizen's radio control frequency of 27.255 mc. The transmitter is unusual in that it is of the MOPA type, that is, master oscillator-power amplifier. While this circuit is a bit more complex than the simple crystal oscillators so widely used in R/C, it has the big advantage that nothing you do to the antenna will change the frequency or stop the transmitter from operating. You can actually hold on to the antenna, and while the signal will naturally be weakened, it will continue to go out on the original frequency. A circuit of this type is ideal for a hand-held transmitter, since the unit may be held in various positions, or even set upon the ground, without putting it out of operation. Actually, the unit

is adjusted to put out the best signal when the case is held in both hands, with the antenna vertical.

Oscillator and amplifier tubes are the same—type 3V4—and this tube is also used in the receiver. Thus only a single spare is required for all positions.

The transmitter sends out an unmodulated signal when the key button is depressed; there is no signal and no B current drain with the button up. The antenna and amplifier output circuit are of a type that allow maximum power to be put into most any length of antenna. Thus, even though the power input to



the amplifier tube is relatively low—as judged by current R/C transmitters—the power put out into the air is ample for long distance control purposes. The use of the MOPA circuit further enhances power efficiency, since the amplifier circuit is inherently more efficient than the usual power oscillator. The power put into the oscillator of this transmitter is very small since it does not contribute to the actual output.

The Model LR receiver is a single tube in the "hard tube" category. This means that tube life will be long and adjustments quite stable, varying only as battery voltages drop. The two main adjustments are made by means of slotted screws; one is marked "T", and governs tuning, while the "S" screw changes the sensitivity. These screws interact a bit.

but the instructions detail clearly how they should be set. The receiver comes properly adjusted, of course, but some installations may require slight resetting for best results.

The receiver may be used up to about 100 yards from the transmitter with no antenna—plenty for boat operation on a small pond.

A plate current meter is required for tuneup; this may be a milliammeter of about 1.5 to 3 full scale reading. Plate current of the receiver is highest when no signal is coming in; it runs about 1.5 ma. with a 60 V. plate supply and a bit higher with 67½ V. The relay is normally set to operate at about 1.2 ma. and open at .85 ma. Since the excellent Sigma 4F unit is fitted, this range of current results in very reliable operation. It is recommended that batteries be discarded when they drop to 50 V. or lower, as idling plate current will be getting too close to the relay operating point. For the same reason, A cells should be replaced when they drop to 1.1 V.

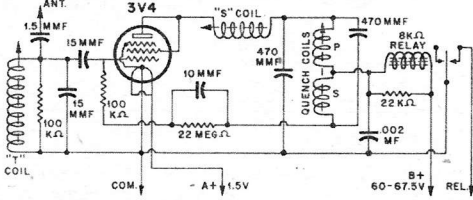
The receiver is mounted on a Fiberglass base, and there are five small Fahnstock spring clips to make connections. Four of these are on corners of the receiver base, and may be used to suspend the unit in the plane by means of rubber bands.

Like most hard tube receivers, this one may be affected adversely by spark ignition. However, a 10,000 ohm resistor in the high tension lead right at the spark plug will usually clear this up.

It is suggested that a double pole, single throw switch be used in the plane to control power to the receiver and escapement. This is necessary (unless a separate escapement switch is used) since the relay contacts close the escapement circuit when the receiver is turned off.

The instruction booklets furnished with these units are detailed and easily understood; that for the receiver includes six pages of written data, and three more of sketches showing installation, battery connections, and the like.

CITIZEN-SHIP LR RECEIVER (27.25 MC.)



CITIZEN-SHIP LC XMTR. FOR 27.25 MC.

