

# **Citizen-Ship** RADIO CORPORATION

FORMERLY VERNON C. MACNABB COMPANY

820 EAST 64TH STREET • INDIANAPOLIS 20, INDIANA  
P. O. BOX 5971 • PHONE CLIFFORD 5-3486

## INSTRUCTIONS FOR USE OF MODEL MSR-8 RECEIVER.

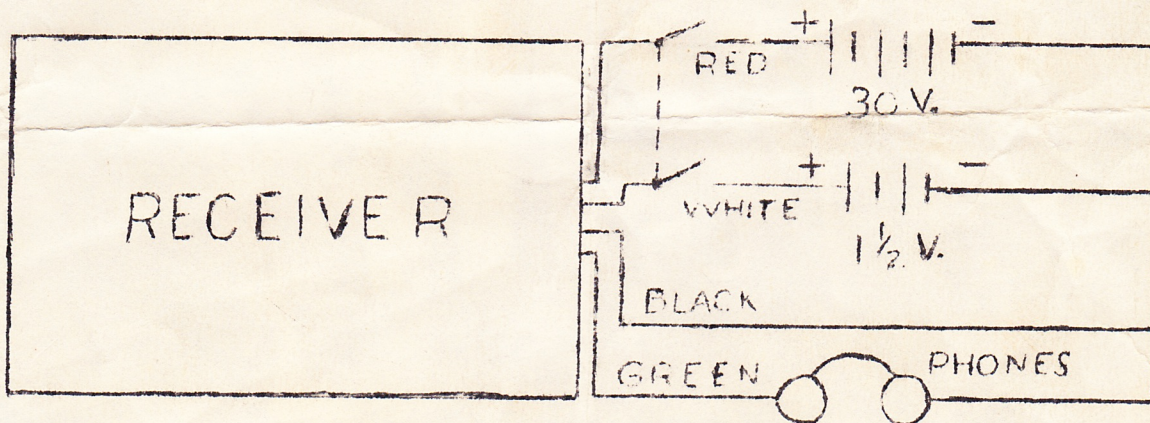
Your CITIZEN-SHIP Model MSR-8 is an 8 channel reed receiver in which any one or two relays may be closed by audio tones tuned to reeds as emitted by CITIZEN-SHIP Model MST-8 multi-channel simultaneous transmitter.

Batteries required are:

- 1 pen cell 1-1/2 Volt "A" battery for filament.
- 1 30 Volt hearing aid battery Burgess type U20 or Eveready type 413 for "B" voltage.

Wiring is very simple:

- Red to  $\nearrow$  B through one side of DPST switch.
- Black to -B and -A.
- White to  $\nwarrow$  A through other side of DPST switch.
- Green to phones (other side of phones to -A and -B).



A plug and socket are provided for insertion between the set and batteries for easy removability of the set.

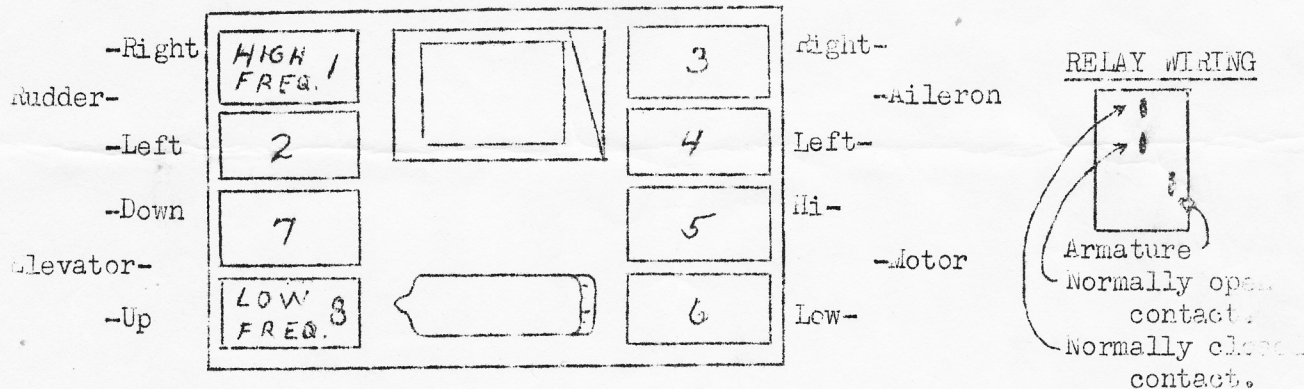
The normal function of this receiver is to give multiple and simultaneous control of a model aircraft and permits the use of rudder, ailerons, elevator, and motor speed. (It is also possible, of course, to use this equipment in a model boat or car.)

When used in a model plane with the functions listed above, experience dictates that certain reeds and associated relays be used for certain functions particularly to obtain simultaneous operation of two control surfaces as follows:

- Two highest tone (shortest) reeds - Rudder.
- Next two highest reeds - Ailerons.
- Two lowest tone (longest) reeds - Elevator.
- Next two lowest - Motor Speed.



With the cover off the set and looking at the top with the tube nearest you, they are as follows:



The relays should be connected as shown in the above diagram to conform to the nomenclature on the control stick and switches on the transmitter.

The rudder and aileron relays theoretically can be operated simultaneously with the elevator and motor relays, but since the reeds of the ailerons and motor speed reeds are adjacent, this operation is marginal. However, it is inconceivable that it would ever be needed.

Both positions of elevator will operate simultaneously with both positions of either rudder or ailerons. Also motor speed can be changed simultaneously with rudder.

Rudder and ailerons cannot be had simultaneously, nor can elevator and motor. These are the reasons for using the arrangement described. (Further understanding of this can be had by reading the MS1-3 Transmitter instructions.)

The relays are double throw single pole for use with motor driven actuators (called servos). Escapements can also be used, but are not recommended where simultaneous is desired.

The wiring diagrams of the servos are packed with them and will not be repeated here.

(An additional length of wire must be added to the antenna wire provided to give an overall length of approximately 24 inches.)

One simple tuning adjustment is all that is required. After wiring the batteries to the receiver, plug in the headphones and listen for the superregen hiss. When transmitter is turned on this should disappear. Adjust the core in coil (with aluminum cover in place) for minimum noise. Remove the antenna from the transmitter completely and move the control stick to get modulation. Retune core for maximum audio tone. Note: If operating receiver with cover off for observation or service it will be necessary to retune the coil, as removing the cover detunes it.

It is advisable to ground check the whole system with antenna in and extended before flying. It should operate on the ground at least 1/4 mile.

It is doubtful if the relays will ever need adjustment.

The reeds should not be adjusted unless made inoperative or unreliable by a crash landing. If a reed can be seen to be vibrating but its associated relay not closing, turn the tiny screw contact a half turn clockwise (Do not screw in and out at random).

Batteries should be replaced when the pen cell drops to 1.1 Volts with filament turned on, and "B" to 22-1/2 Volts with set on. Reduction in "B" voltage is easy to spot. When its voltage gets very low, simultaneous operation gets marginal but single operation is still reliable.

Do not use 45 Volts or transistors may be harmed.

The receiver should be mounted vertically by enclosing it completely in one inch thick sponge rubber (all six sides so it is completely floating) with the bottom of the set toward the front of the plane. When so enclosed it will withstand very hard shocks or crashes. Thin wire should be used to connect servos to the relays.

#### WARRANTY

Your CITIZEN-SHIP Model MSR-8 Receiver is warranted by the manufacturer to be free from defects in material and workmanship. However, the tube will not be replaced because of an open filament as factory testing of the set before shipment indicates it to be in good operating condition before shipment is made. The transistors are also known to be operative from testing of the set and we cannot guarantee them against damage caused by incorrect voltage.

Any receiver failing to operate within 30 days after date of purchase will be repaired or replaced free of charge upon being returned to the factory. This warranty does not apply to failure of operation due to exhausted or improper batteries.

If your receiver is damaged in shipment, you should file a claim with the carrier immediately upon noting the damage.

This warranty does not apply if, in our judgement, the receiver has been tampered with or received abusive treatment beyond that encountered in normal usage.

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