INSTRUCTIONS FOR OPERATION

OF

CITIZEN-SHIP SELECTIVE SUPERHETERODYNE

MODEL JSH RECEIVER

CITIZEN-SHIP RADIO CORPORATION
810 EAST 64TH STREET
INDIANAPOLIS, INDIANA

INDEX FOR JSH RECEIVER INSTRUCTIONS

INSTRUCTIONS FOR INSTALLATION AND OPERATION OF MODEL JSH RECEIVER

A. Your CITIZEN-SHIP JSH Receiver is a highly selective, miniaturized, superheterodyne crystal controlled tone operated receiver that will operate on any of the new FCC frequency assignments from 27.255 through 26.995 with no interference from a transmitter on any other of the five frequencies.

B. This receiver will operate only from a Tone Modulated transmitter tuned to the correct frequency. CITIZEN-SHIP Model CTX is especially designed to operate it and should be used. However, our REX or MST-8 may also be used when tuned up with the proper crystal. (An on-off carrier transmitter will not operate this set.)

C. The JSH Receiver is shipped adjusted and tuned for reception on the frequency which is stamped on the box and on the bottom of the case. The transmitter used must, of course, be tuned and adjusted to transmit on the frequency for which the receiver is operating.

D. Before you become alarmed at the frequency of the crystal in the receiver, the frequency of the receiver crystal is always 0.455mc lower than the frequency at which the transmitter operates. Example: If you have a receiver tuned for 27.145, the receiver crystal should read 26.690 (i.e. 27.145 - .455 = 26.690.)

2. CRYSTALS AND SELECTION OF OPERATING FREQUENCY OF RECEIVER.

A. If you desire to select another of the available 27mc frequencies, and feel that you can not or do not wish to do the work yourself, you may ship the set to CITIZEN-SHIP and we will exchange crystals and realign and retest the set for $2.50. (The receiver crystal is soldered in place, and although eyelets are provided to facilitate resoldering a different crystal, care must be used not to injure the circuit board.)

Your transmitter will also need to have the crystal changed to match your receiver. Instructions with your CITIZEN-SHIP transmitter describe how you can change crystals and retune the set with the use of a field strength meter. If you prefer to ship the set to us for this work, charges will be $2.50 for it also. No transmitters other than CITIZEN-SHIP manufactured will be adjusted.

B. Warning! It is absolutely essential to obtain crystals of the correct frequency and tolerance. Because of the selectivity of the receiver, the crystals must be ground to a tolerance of .0025%.

C. Crystals must be used in pairs as follows:

TRANSMITTER CRYSTAL FREQ.	RECEIVER CRYSTAL FREQ.
27.255	26.800
27.195	26.740
27.145	26.690
27.095	26.640
27.045	26.590
26.995	26.540

3. WIRING RECEIVER.

A. Wiring the receiver is very simple as it uses only one 9 Volt hearing aid battery. (See Par. 4.) Red wire is connected to the plus battery terminal and black wire to minus through an off-on single pole single throw switch. (See Figure 1.) See mention of battery clip in Section 4 below.

4. BATTERY REQUIREMENTS.

A. Since the set is all transistorized, only one 9 Volt Battery is required. Two types of 9 Volt batteries are currently available:

Eveready #216 or Equivalent	Weight 1-1/4 oz.
Burgess #P6M or Equivalent	Weight 1-3/4 oz.

Either style gives long life as they are designed for home receiver transistor radios drawing even more current than the JSH. Furnished with the set is a battery clip to fit the #216 Eveready (Burgess 2V6).

5. END USE OF BATTERIES.

A. Whereas the set is still operating as low as 6 Volts, do not fly when the 9 Volt battery reads less than 7 Volts with the set turned on. At 7 Volts the sensitivity is starting to fall off rapidly.

B. End use of escapement batteries is generally 2.2 Volts for the two batteries measured in series under load.

6. MOUNTING.

A. When mounting in a model plane, the preferred arrangement would be vertical with the bottom of the metal box toward the front. Glue the bottom of the box to a thick piece of sponge rubber which in turn is glued to a removable vertical partition. (See Figure 2.)

B. Batteries and receiver must be mounted to give proper balance to the plane, but batteries should always be forward of receiver. If vertical mounting is used it is convenient to mount both receiver and batteries on a removable plywood board. Rubber cement does a good job.

C. The set can, of course, be mounted horizontally especially in boats where crash danger is minimized.

7. OPERATION OF SERVOS AND MOTOR CONTROL UNITS.

A. The wiring of Servos and Motor Speed Control units varies so greatly that the wiring for them is not shown. However, a diagram showing nomenclature of a relay is shown. (See Figure 3.) All CITIZEN-SHIP Servos and the CITIZEN-SHIP Motor Speed Control unit have their own complete wiring diagram showing how to connect them to a relay.

B. The armature or frame of the relay in this set is not connected to ground or the red wire, but is insulated and therefore a separate orange wire is brought out (See Figure 3.) so in using this set with conventional wiring diagrams of escapements and servos which show a common or ground connection, use the orange wire instead of the red wire.

8. ANTENNA.

A. Several arrangements of antenna are possible. A stiff steel wire at least 18" long may be mounted vertically at any convenient point and the antenna lead from the receiver soldered directly to this. A wire may be stretched from the receiver to the top of the rudder fin. With a superheterodyne receiver, the longer the antenna the better the operation. Use as long an antenna as possible. Leave some slack in the antenna lead into the receiver, but do not wind this lead in and around other wiring as range might be reduced.

9. RETUNING AND ADJUSTING.

A. The JSH Receiver is tuned and adjusted at the factory. Only the antenna coil should be adjusted after installation in the plane and connected to the plane's antenna. This adjustment must be made with the set cover in place.

B. Assuming that the proper voltages have been connected to the receiver, connect a pair of head phones from the green wire to ground (red wire) as shown in Figure 1. Make sure that the transmitter you are using is equipped with the correet crystal to go with the frequency of the receiver.

C. With the transmitter turned on, you should hear a tone in the head phones when the operate button on the transmitter is pushed. If you hear nothing, recheck your crystal frequencies and make sure the set is wired properly. DON'T START ADJUSTING ALL THE COILS on the assumption that they are out of tune. We know they were properly adjusted at the factory.

D. Using an all-bakelite screw driver or a wooden dowel sharpened to a wedge-shape, turn the antenna coil core back and forth until the loudest signal is heard. Now remove the antenna from the transmitter and place it as far away from the receiver as a signal can still be heard. This is probably only 1 or 2 feet. Readjust the antenna coil for the loudest signal. See Figure 1 again for location of antenna coil adjustment.

E. If the signal can be heard with the antenna out up to a foot or two, it is inadvisable to make any further adjustments. If, however, the set seems definitely weak, and this can only be ascertained on a distance check with the antenna in the transmitter, it is permissable to remove the cover from the set and readjust the IF coils for the loudest signal in the same manner that you adjusted the antenna coil. Never turn these cores more than a quarter of a turn, because if more adjustment than that is necessary it means the crystals are wrong. The antenna coil can be adjusted with the cover off, but it needs readjustment when the cover is put on, as the setting is different with the cover off and on for the antenna coil only.

WIRING DIAGRAM

FIG. 1

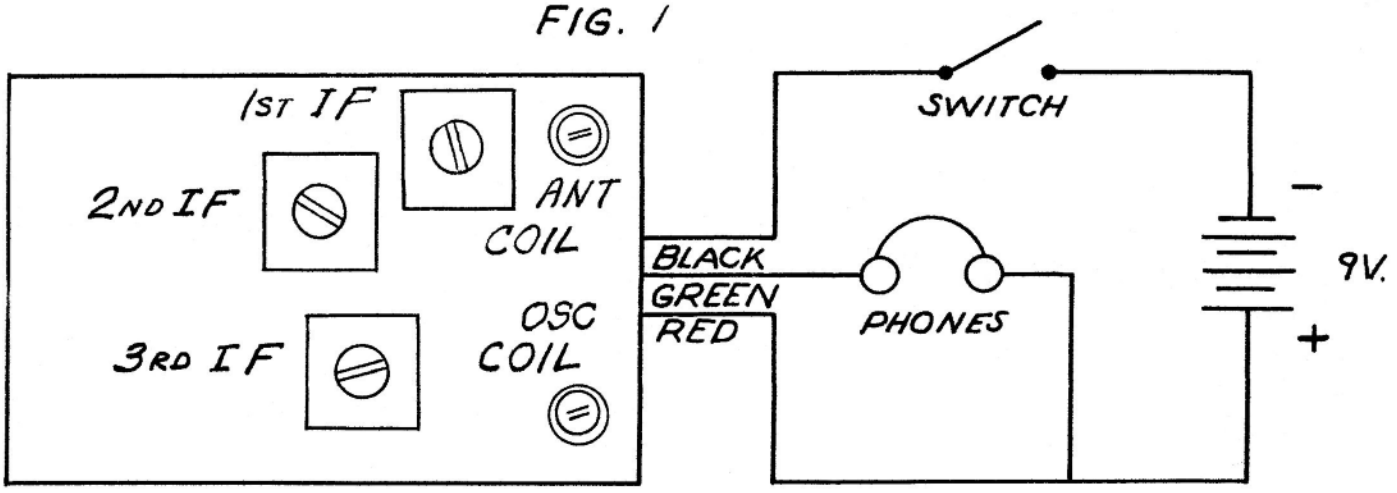


FIG. 2

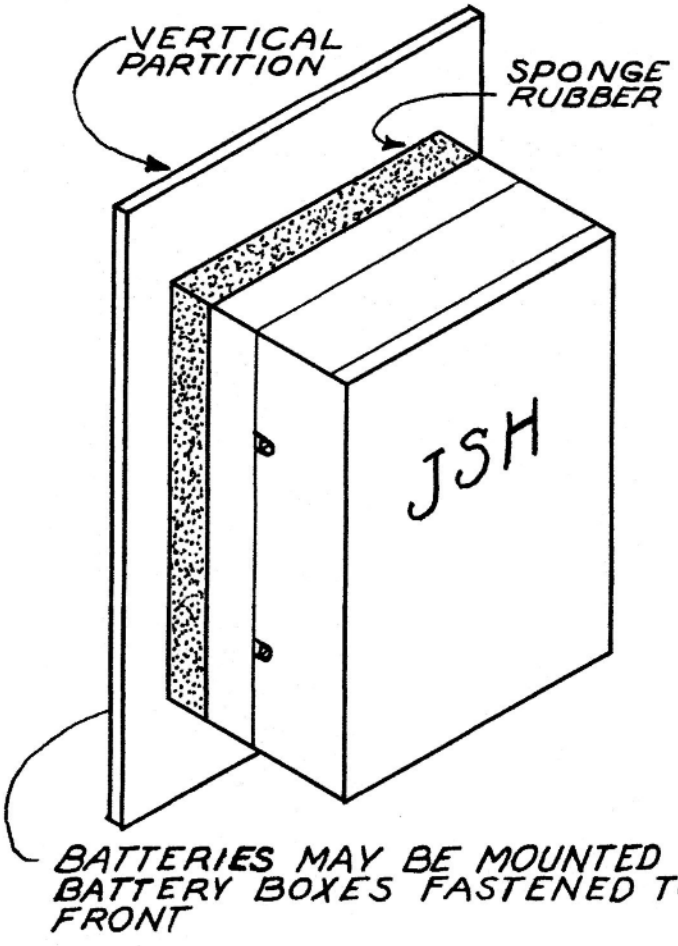
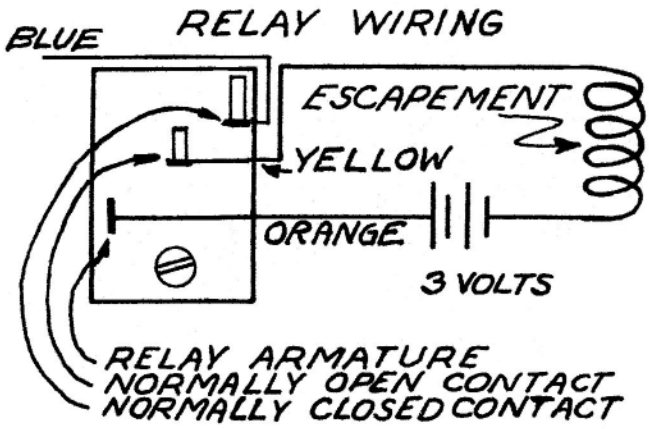


FIG. 3



F. The oscillator coil should never need retuning unless the modeler elects to change crystals which are widely different from each other - such as from 27.255 to 26.995.

G. If there is any doubt in your mind, distance check the receiver before flying.

H. This set has been carefully checked for noise interference from escapements and from the CITIZEN-SHIP servos, and there is absolutely no interference from either of these units. It is impossible for us to check all of the other servos and actuating devices on the market, but we can guarantee this set will operate properly without noise interference from any of these CITIZEN-SHIP actuators.

WARRANTY

Your CITIZEN-SHIP Model JSH Receiver is warranted by the manufacturer to be free from defects in material and workmanship. However, the transistors are 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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