INSTRUCTIONS FOR OPERATION

OF

CITIZEN-SHIP MODEL CNT-8 OR CNT-10 TRANSMITTER

CITIZEN-SHIP RADIO CORPORATION
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INDIANAPOLIS, INDIANA

INSTRUCTIONS FOR USE OF MODEL CNT-8 OR CNT-10 TRANSMITTER

Your CITIZEN-SHIP Model CNT-8 or CNT-10 Transmitter uses a high output MOPA circuit which can be modulated with either one or two highly stable audio tones to achieve simultaneous operation of two control surfaces of a model aircraft through the use of the CITIZEN-SHIP KV-8, MSR-8 or SS-MSR-8 multi-channel simultaneous receivers. This transmitter is crystal controlled and intended for use with all the 27mc frequencies.

FREQUENCIES OF OPERATION

It may be used on any of the six following frequencies by plugging in the desired frequency crystal and very slightly retuning the oscillator adjustment.

27.255	27.095
27.195	27.045
27.145	26.995

All RF tuning adjustments have been completed at the factory using the crystal with which the set is shipped and should not be changed if you wish to continue using transmitter on this frequency.

INSTRUCTIONS FOR RETUNING IF CHANGING CRYSTAL

CAUTION: This adjustment must be done using a Field Strength Meter.

The brass screw above the crystal tunes in the oscillator. The compression trimmer above it tunes the output tank circuit and the brass screw to the left of the trimmer tunes the antenna. Never change any of these adjustments without the aid of a Field Strength Meter. To change frequency, plug in desired crystal and re-tune only the oscillator adjustment to give the optimum output on the Field Strength Meter. Now back out (counter-clockwise) 1/4 turn as a safety factor.

If you cannot obtain the proper crystal you wish to use or feel you do not wish to make the change yourself, return the unit to the factory with a note stating your wishes. A minimum charge of $2.50 will be made which includes the crystal trade.

ASSEMBLY

Batteries required are two 67 - 1/2 volt B batteries Burgess type XX45 or Eveready #467, and one 1 - 1/2 volt Burgess type 4F or Eveready type #742. Filament current is only 300 M.A. and plate current 16 M.A.

Screw the antenna into the stud provided below the hole in the top of the cabinet and extend to full length for flying. Testing can be done with the antenna collapsed.

OPERATION

Since the reeds used in the receiver are very sharply tuned, the audio tone from the transmitter must be extremely stable and not drift off frequency. This circuit used in the CNT-8 or CNT-10 is being used in a well-known electronic organ and is probably the most stable circuit that can be produced for this application. Once set, it should stay tuned for weeks.

In rear of the transmitter at the top are 8 or 10 controls accessible through holes in the back cover which permit the audio tones to be tuned exactly to the reeds in the receiver. They are arranged for maximum convenience if the receiver is connected in accordance with the instructions packed with it and are shown here.

If some other arrangement of connecting the reeds is used, the following chart identifies the control used with the 8 or 10 various audio tones.

1. RIGHT RUDDER - Highest Tone.
2. LEFT RUDDER
3. RIGHT AILERONS
4. LEFT AILERONS
5. HIGH MOTOR
6. LOW MOTOR
7. DOWN ELEVATOR
8. UP ELEVATOR - Lowest tone 8 channel.
9. DOWN TRIM
10. UP TRIM - Lowest tone 10 channel.

The first four tones (high frequencies) are produced by the audio transformer to the left (rear view) and the last four or six (low frequencies) by the transforner to the right.

Any one of the first four frequencies should theoretically produce simultaneous operation of the reeds with any of the last four or six, but practically adjacent reeds will not work simultaneously. However, with the arrangement suggested, it is inconceivable that motor speed would need to be changed during a maneuver using ailerons. If any two controls produced by one audio transformer are signaled together neither control will be obtained.

Action of the lever switches gives control as indicated by the printing on the front panel. Tune in the reeds by rotating the correct control for best operation. An adjacent reed may sometimes be tuned in, so be sure the correct reed is vibrating by checking the servo or actuator motion associated with the control.

Now check simultaneous operation of rudder and elevator. If may be found that one of the actuators fails to function. Retune this control until simultaneous operation occurs. Sometimes beats occur between reeds causing alternate dropping in and out of one actuator. Retune the OTHER control very slightly to eliminate the beat but not enough to cause this actuator to drop out. Also, check simultaneous Aileron and Elevator control. Retune controls if necessary.

Tuning of controls may be done while signaling simultaneous signals. This is a rapid and accurate method. Width of control tuning to give simultaneous operation will be much less than that which will give single or one reed operation.

If a step type servo or escapement is used for motor speed, the motor switch will be used in only one direction. If is intended, however, that a trimmable servo be used as generally they give far more satisfactory operation.

Check battery voltages periodically. The transmitter will work with B voltages as low as 80 volts (down from 135), but range may be decreased. The "A" Battery should be changed when voltage reaches 1.2 volts with transmitter turned on.

Don't make the following adjustments except as a last resort:

If a control adjustment fails to reach a reed frequency when in maximum clockwise or counter-clockwise position it is possible to readjust the transformer air gap by means of the screw to bring it in. CAUTION: This will shift all four or six frequencies associated with this transformer. From rear view, the left transformer shifts high tones, right transformer shifts low tones. Closing the gap lowers the frequencies, increasing raises. A quarter turn of the screw is generally enough. If you adjust this, mark the screw so you can get back to where you started as it is easy to get confused. This is normally a factory adjustment.

WARRANTY

Your CITIZEN-SHIP CNT-8 or CNT-10 Transmitter is warranted by the manufacturer to be free from defects in material and workmanship. Any transmitter 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 transmitter 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 transmitter has been tampered with or received abusive treatment beyond that encountered in normal usage.

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