

INSTRUCTIONS FOR OPERATING  
CITIZEN-SHIP MODEL TTX TONE TRANSMITTER

CITIZEN-SHIP RADIO CORPORATION  
810 East 64th Street  
Indianapolis, Indiana

## INSTRUCTIONS FOR OPERATING CITIZEN-SHIP MODEL TTX TONE TRANSMITTER

The TTX is a miniaturized, all transistor, low power tone transmitter for use on the Citizens Band frequencies especially assigned for use of radio control models.

Its power is carefully limited to just under 100 milliwatts input to the final output transistor to qualify under Federal Communications Commission Regulation, Part 15, Sub-Part E so that no license whatsoever is required by the user.

In spite of the low power (and in consequence, low battery consumption), CITIZEN-SHIP has carefully designed the TTX for maximum efficiency so that its range compares favorably with many tube transmitters using 25 times as much battery power. It is primarily intended, however, for use with small 1/4 and 1/2 A powered radio controlled planes that may be flown in a limited area. This transmitter will work especially well with the sensitive CITIZEN-SHIP LT"3" Receiver and the C/S-R/C Pack containing this receiver. The frequency of the tone is approximately 700 cycles, a tone to which the CITIZEN-SHIP LT"3" is particularly sensitive. However, any single channel tone receiver will operate with this transmitter. Other CITIZEN-SHIP types are the JSH super-het (frequencies must match, see JSH instructions), and the 3VTR.

This high efficiency has been accomplished by the use of collector modulation which does not reduce the RF output of the transmitter as does grid modulation commonly used in tube R/C Transmitters. In addition, an externally loaded and precision tuned antenna system gives maximum radiation of the power available. The antenna tuning is arranged for maximum output when held in operators bare hand. Body capacity serves as a counterpoise antenna.

### PREPARING TTX FOR OPERATION

In unpacking the Transmitter, notice that a loading coil with a 7" piece of 1/8" brass rod permanently attached and a red ball are included. Purchase in addition from your hobby dealer an ordinary piece of 3/32" piano wire 36" long. All hobby dealers stock this wire for landing gears, etc. (This wire is not packed with the transmitter in order to save cost of shipping carton.)

Push the ball onto one end of the 3/32" piano wire. Removing burrs from the wire end will facilitate assembly. It will fit tight and may need to be hammered on.

Remove the back of the transmitter and insert the 1/8" brass wire of the loading coil assembly through the rubber grommet on the top of the transmitter and into both sockets until it bottoms in the lower one.

Place the 36" length 3/32" wire into the fitting on top of the external loading coil. (Other end from 1/8" brass rod.) This is the complete antenna system and may be disassembled for transporting or storage.

### BATTERIES

One single type Burgess #2N6 9 volt battery or equivalent is the only battery supply required. Simply snap this onto the clip fastener on the red and black wires at the bottom of the printed circuit chassis and place into the space provided. (In an emergency, a standard 9 volt transistor battery available in any drug store will operate the transmitter, but life will usually be less than 1/2 of the recommended batteries.)

Eveready #246  
RCA #VS305

## OPERATION

On the front of the TTX Transmitter are two switches. The one on the left labeled Carrier and ON stays either up or down when so placed. (This should always be OFF or down when the transmitter is not in use.)

The switch on the right labeled Operate is a spring return type and always returns itself to the down or off position. To operate, push up.

READ THIS CAREFULLY: When the left hand or Carrier switch is placed in On position, the Transmitter Carrier is being signaled all the time and battery power is being used.

The right hand or Operate switch turns the transmitter on completely when pushed up (that is, both carrier and tone are turned on) regardless of the position of the left hand carrier switch.

THIS IS THE REASON for the two switch arrangement. Tone receivers are much less subject to interference from Class D or voice transmitters if the carrier to which the receiver is tuned is on at all times. The carrier reduces the sensitivity of the receiver to off frequency carriers from Class D stations.

Therefore, when flying in a remote location away from Class D or voice stations, leave the carrier switch off and use only the operate switch thereby greatly prolonging the life of your transmitter battery.

If you should encounter interference, turn on the carrier switch and interference will be eliminated or greatly reduced but there will be a constant drain on the battery. (Always turn off the carrier switch when the transmitter is not in use.)

## CHANGING CRYSTALS

The crystal plugs into a socket and may be changed to any other of the assigned frequencies (26.995, 27.045, 27.095, 27.145, 27.195, and 27.255), but the transmitter must be carefully retuned using a Field Strength meter. (See paragraph on Tuning.)

## TUNING

All 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 the transmitter on this frequency.

Tuning is accomplished by adjusting the two compression trimmers. The oscillator trimmer is at the lower right (looking into the back of the set) and the output trimmer is on the upper left side. Never change these adjustments without the aid of a Field Strength meter. A 0 - 25 MA or higher meter may also be inserted in series with "B" battery to measure total "B" current and to assist in tuning as described in the following paragraph.

When tuning, hold the transmitter in your hand as you are the counterpoise antenna. Both trimmers must be adjusted for the maximum output on the Field Strength meter. Battery current is at maximum with correct adjustment of Oscillator Trimmer. Battery current is at minimum with correct adjustment of Output Trimmer.

## WARRANTY

Your CITIZEN-SHIP TTX 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.

CITIZEN-SHIP RADIO CORPORATION  
810 East 64th Street  
Indianapolis, Indiana