

INSTRUCTIONS FOR THE
CG Model RT-5 Transistorized Tone Receiver
Manufactured by
CG Electronics Corporation
305 Dallas Street, N. E.
Albuquerque, New Mexico

INTRODUCTION

The CG Model RT-5 receiver is a five channel tone receiver of the latest design incorporating transistors and printed circuitry. This design makes possible a very compact unit with small battery requirements. The RT-5 receiver uses subminiature components throughout which results in a compact reliable unit. The CG RT-5 receiver uses resonant reeds for audio channel discrimination which insures reasonable sensitivity for control within range of sight. Antenna length will not affect the receivers performance and adjustments are not critical. The receiver is adjusted at the factory and under normal conditions should not require further tuning or adjustment. The RT-5 receiver operates on a carrier frequency of 27.255 Mcs. and the channel frequencies are fixed tuned between 250 and 400 CPS.

Power Requirements:

Plate Supply - 22.5 to 45 volts. Idles 1.5 MA. using 30 volts.
Filament - 1.5 volts. at 40 MA.

NOTE:

Transistors are for practical purposes indestructible when operated within their ratings. They have no filament to burn out and no glass envelope to break, therefore, if your RT-5 receiver should fail to operate DO NOT TAMPER WITH THE TRANSISTORS because they must be replaced with a unit that is selected for best performance. Transistors are temperature sensitive and cannot endure extreme heat. The RT-5 circuit has been tested over a temperature range of zero to 150 degrees F. This should be more than adequate for all R/C applications. The idling current of the RT-5 receiver is approximately 1.5 MA at 70 degrees F. As the temperature increases the idling current will increase also. This is normal for transistor circuits of this type and does not impair the receivers performance.

BATTERIES

The recommended voltage for the plate batteries is 30 volts. One 30 volt hearing aid battery is recommended. The plate battery should be replaced when the voltage drops below 27 volts as they are subject to failure at this point. To measure the plate batteries turn on the receiver and read voltage with a meter while the receiver is operating. Filament batteries are checked in the same manner and should be replaced when they read 1.1 volt or less. If battery voltage is not steady but instead creeps lower when tested under load, replace them. A fresh pen light cell for the filament supply will usually last for more than one days flying with a reasonable rest between flights. Wire the batteries as shown in the wiring sketch.

ANTENNA

The antenna length of the CG Model RT-5 receiver is not critical. Length of antenna may vary from 12 to 36 inches. A vertical antenna made of music wire and allowed to extend above the fuselage works nicely. A trailing wire will, also, work satisfactorily if kept clear of fuselage containing wiring and push rods.

INSTALLATION

The CG Model RT-5 tone receiver can be mounted in any convenient position within the model. The receiver should be shock mounted by any one of the common methods; rubber-band suspension, sponge rubber or Lord Mounts should be satisfactory. Mount the receiver in a position that will allow plenty of clearance. This is necessary so that a rough landing or impact will not bounce the receiver against anything solid which could result in damage. Connect the wires as shown in figure 1 and allow enough slack in the wires to permit the receiver to move freely within its mounting limits. If this isn't observed, a rough landing could break the wiring free from the receiver. Solder all connections securely and do not depend upon the solder to hold the wire to the terminal; always wind the wire around the terminals first, then solder it in place. Locate the batteries where necessary to balance model. All batteries may be mounted in the same compartment of model. Be sure to use a double pole single throw switch or two single pole switches. The plate supply must be switched off when not in use. If this isn't observed the plate batteries will run down while the model is stored because there is a small amount of current flowing in the transistor circuit even when the tube filament supply is turned off. Spark suppression is necessary to prevent the relays from sticking. A .1 capacitor with a 10 ohm resistor in series can be connected across the relay points. Another method that works nicely with escapements or motors, is to connect a 100 ohm 1/2 W carbon resistor directly across the motor or actuator leads.

TUNING AND TESTING

Upon completion of the installation of the CG Model RT-5 receiver, make certain it is wired correctly and that all connections are secure. Install a pair of headphones in the test jacks and turn on the switch. After approximately 15 seconds, a rushing noise should be heard in the phones. If no noise is heard, make certain that your transmitter is turned off or that no other receiver is operating nearby. If you still do not hear the noise, re-check the wiring and make certain the battery polarity is correct. When a rushing noise is heard, turn on your transmitter. The transmitter should have the antenna collapsed and removed from the receiver by at least 25 feet or if you cannot shorten the antenna, move the transmitter at least 250 feet from the receiver. It is wise to have some assistance when tuning the receiver. Now tune the receiver tank coil, marked "A" in figure 1, while your assistant depresses one of the channel buttons on the transmitter, you should hear a clear audio tone each time the transmitter button is depressed. Tune the receiver for maximum signal indicated by the loudest tone. You have to make this adjustment only once. The receiver should remain in tune thereafter. Your RT-5 receiver has been adjusted at the factory and in most cases it should not

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require adjustment. You are now ready to tune the transmitter audio channels to the receiver. This subject is covered in the instructions included with the transmitter. The reeds should not require adjustment but could get out of adjustment through use and rough handling. The normal adjustment is about two thousandths of an inch between the reed and the contact arm. This is not too critical but if it is too close, vibration might operate a relay causing false control. If this happens, check the receiver shock mount before adjusting the reeds. The reed relay is critical to dust, dirt or oil, therefore when making the installation locate the receiver where it is least susceptible to these elements. If the reeds are dirty it will be possible to hear the reed vibrate when the transmitter is keyed but the relay will not operate. A clean piece of bond paper passed between the reed and the contact will, in most cases, be sufficient. If there is oil present, it may be necessary to wash the reed and contact with carbon tetrachloride using a fine bristled brush. If the relay operates but the control actuator does not the same treatment should be given the relay points. The relays are adjusted at the factory to pull in at 2 MA.

WARRANTY

The CG Model RT-5 receiver is guaranteed against defective parts and workmanship for a period of 30 days from the date of purchase. If for any reason the receiver fails to operate send it directly to the manufacturer for inspection and repair. The guarantee applies only when used with a CG Transmitter or one approved by CG Electronics Corporation. If the receiver has been tampered with or shows evidence of abuse the warranty is void. The tubes are not guaranteed against burn-outs or breakage. Enclose 35¢ for postage and handling with each receiver returned under our warranty. We are not responsible for equipment damaged in shipment.

REPAIR SERVICE

The factory will repair your receiver and check it for a minimum charge of one dollar and thirty-five cents (\$1.35). Send the damaged receiver to:

CG Electronics Corporation, 305 Dallas, N. E., Albuquerque, New Mexico. Include one dollar and thirty-five cents with the receiver and if for any reason the charge is to be more, you will be advised before the receiver is repaired.