Controlaire 4

OPERATING INSTRUCTIONS

The Controlaire 4 is an all-transistorized superregenative receiver of advanced design. It eliminates all of the undesirable features of receivers of this type used in the past. It will not swamp from strong transmitted signal conditions and has excellent noise rejection qualities. Last, but not least, it is fully temperature compensated to operate between 0° and 130° F. For operation, the receiver requires a tone modulated signal from 500 to 1000 cycles per second. Factory assembled receivers are tuned to 26.995 mc, however, they can be retuned to match any transmitter R.F. frequency from 26.995 mc to 27.255 mc. If your transmitter is at another frequency other than 26.995 be sure to retune the receiver before use.

TRANSMITTER REQUIREMENTS

For best results the transmitter should have a radiated RF output in excess of 75 millawatts and be tone modulated to a percentage of at least 75%. Tone frequency should be a desired 700 CPS, however, if from 500 to 1000 CPS it will give satisfactory operation. Average receiver sensitivity is about 4 micro volts so a transmitter below these specifications might create a range problem. For best results we recommend the companion Controlaire "Mule" transmitter. This is an all-transistorized unit and exceeds the specifications as given above.

BATTERY REQUIREMENTS

3.0 to 3.6 volts are required. For best results a separate set of batteries, two pen cells, should be used to power the receiver and a separate set used to power your escapement or servo actuator. Receiver batteries should be changed when their voltage falls below 2.2 volts. This is measured with receiver turned on and actuated with a transmitted signal.

RECEIVER OPERATION

With the transmitter off, receiver turned on, the receiver will idle at about 2 or 3 ma. This is measured by the 0-100 ma meter as shown installed in the receiver circuit. Generally, there will be no nervous fluctuation as experienced with other superregens, however, upon receipt of transmitted tone signal the current will rise to about 25 to 27 ma. This current rise should operate the relay and in turn actuate the escapement or servo actuator. Sometimes to expedite delivery, receivers are supplied with 50 ohm relays instead of the standard 100 ohm unit. This is identified by the relay coil covering, green for a 100 ohm relay and black for the 50 ohm. If your receiver is equipped with a 50 ohm relay the current rise will be almost 55 ma upon receipt of tone signal.

TUNING

Only one adjustment is involved and this is the turning of the slug in the coil assembly. One method of adjustment is to position your helper and transmitter about 100' distant. With transmitter antenna collapsed, key a transmitted signal and adjust the slug for highest meter reading. If the meter already reads at the maximum point of 25 to 27 ma adjust the slug both ways noting points where meter dropped off then centering the slug in the midway position. Always use an insulated tuning tool when making adjustments to the tuning slug. Another method that works well on most transmitters is to remove transmitter antenna to create a very weak signal condition. Hold transmitter near receiver antenna, key signal, then adjust tuning slug for

highest meter reading. As adjustment tends to take the reading toward the maximum current point, weaken transmitted signal by moving transmitter further away from receiver antenna until a fine tuning peak can be obtained. If your companion transmitter is the 9v Controlaire Mule antenna-less operation will be 3" to 10" from receiver antenna.

RELAY CONTACTS

Occasionally clean the relay contacts with a contact burnisher or real fine emery paper. Dust or dirt in the contacts can really bug you so use common sense with respect to cleanliness.

RELAY ADJUSTMENT

As supplied, the relay has been adjusted to pull in at about 18 ma and drop out about 10 ma. If yours is a 50 ohm relay double the above values. Under normal conditions it should remain in adjustment, however, after a hard knock you may have to readjust assuming operation is affected. In practice the relay is first adjusted by bending armature contact so a condition of pull-in allows the armature contact to strike the lower fixed contact before the main armature contacts the coil pole piece. In practice actuate the armature lightly with your finger or small tool and notice that when the contacts are just closing that a small air gap is visible - about .001 between main armature and coil pole piece. After this is adjusted lightly hold the relay in a pulled-in condition and adjust clearance between moving contact and upper contact to be about .003". This is done by bending upper contact. Generally after these fixed adjustments are made the actual pull-in and drop out can be adjusted by increasing or decreasing armature coil spring tension. Increase tension to increase pull-in point and visa versa.

GUARANTEE AND REPAIR

Guarantee - 60 days and is void if you dig into or modify the receiver.

Repair - Send your receiver and $2.50 (our minimum) to Controlaire Division, World Engines, Inc., 8206 Blue Ash Road, Cincinnati, Ohio 45236. Tell them in a note what you think the trouble is. Do not make them guess.

For slow repair service - 3-4 weeks longer - Ignore the above instructions. 2. Have your dealer send the receiver to us - this really slows things down as the dealers are busy and cannot drop everything to do your mailing for you - and he may elect not to follow the above instructions also. 3. Leave your name off of the returned receiver.