CONTROLAIRE

SH-114 Relayless Galloping Ghost Receiver

OPERATING INSTRUCTIONS

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The SH-114 receiver was designed to relieve the problems normally encountered with relay receivers used in pulse systems, i.e., susceptibility to engine vibration and poor or erratic operation at higher pulse rates.

The 4.8 volt receiver supply batteries are used to power the actuator through internal switching, thereby simplifying installation wiring. This power supply also lends itself readily to the use of the Controlaire Rate Decoder and other fast pulse systems which normally require 4.8 volts.

The circuit employs the well proven methods of peak detection and clippinf for noise suppression as used in the SH-112 receiver and its predecessor, the SH-100. In addition, a certain amount of "thresh-holding" is utilized in the audio portion of the SH-114. This requires the desired tone signal to be of sufficient magnitude to"self-suppress" electrical noise before it can trigger the switching portions of the receiver. The result is a receiver which gives very smooth performance in the air without the characteristic occasional kick due to spurious electrical noise or vibration.

RECEIVER BATTERIES AND WIRING:

The power supply for this receiver consists of (4) 1.2 volt nickle cadmium cells, giving a total of 4.8 volts (center tapped). Cells of 600 MAH or greater capacity are recommended to attain a reasonable operating time on the average system. Operating time on any size cells will, of course, depend on the current drain of the particular actuator used. Refer to the schematic for details on wiring the battery pack. Notice that there are (5) wires emerging from the receiver through the rubber grommet. (1) red, (1) black, (1) yellow and (2) white. These wires are connected as follows:

Red wire to positive end of battery pack.
Black wire to negative end of battery pack
Either white wire to center tap on battery pack.
Other white wire to one terminal of actuator motor.
Yellow wire to remaining terminal of actuator motor.

It is suggested that a polarized plug be installed in the battery leads to preclude improper connection and further that the female portion be installed on the battery wires to prevent the pack from being damaged by accidental shorting of exposed plug pins. a non-polarized plug should be used between the receiver and actuator to facilitate easy rudder direction change for use in different models.

ACTUATORS

The SH-114 was designed to operate the Controlaire Ghost Actuator but will operate equally well with the various Rand models and any other motor driven actuator designed for a nominal 2.4 volt operation. At least normal motor arc suppression should be used, i.e., a 47 ohm resistor and a .05 capacitor should be placed across the motor terminals.

Magnetic actuators may be used but the coil hook-up must be such that the two coils aid rather than oppose each other (whether you wire the two coils in series or parallel). Actually, the SH-115 receiver is more compatible with magnetic actuators but these remarks are presented to preclude questions as to whether these actuators can be used with the SH-114.

RECEIVER TUNING

A tuning point is provided in the receiver in the form of a 4.7K resistor located between the audio transformer and the last I.F. can (black tuning slug). To utilize this method of tuning, a short length of hook-up wire should be soldered to the exposed lead of this resistor to facilitate hook-up to an oscilloscope or AC Voltmeter. The ground lead of your test instrument should be isolated from the receiver positive supply voltage by a 10K resistor to prevent mis-tuning by loading the circuit. Once your hook-up is made, apply a weak solid tone signal from your transmitter and tune the antenna and I.F. coils for maximum signal. Since the I.F. coils are more critical and normally only the antenna coil is effected by installation proximity and antenna exposure. It is suggested that the I.F. coils be tuned only when matching the receiver to a different transmitter.

An alternate method of tuning consists of applying a weak signal and moving the transmitter away until the receiver just quits operating. Retune the antenna coil and (3) I.F. coils in succession, (yellow, white, and black slugs), to bring the receiver into operation. The idea here is to obtain the tuning which will give the maximum operating distance from the weak signal and the results will be identical to those obtained using the first tuning method.

If you utilize the sub-antenna of the companion Controlaire Galloping Ghost transmitter, an operating range of between 12"and 15" should be considered normal and sufficient for out of sight and back operation of this type of equipment.

TRANSMITTER REQUIREMENTS

Due to the extreme clipping action within the I.F. of this receiver, very near 100% transmitter modulation is required for proper operation. Low modulation percentage causes the receiver to null at various distances from the transmitter. The companion Controlaire Galloping Ghost transmitter is recommended but any transmitter having good modulation may be used.

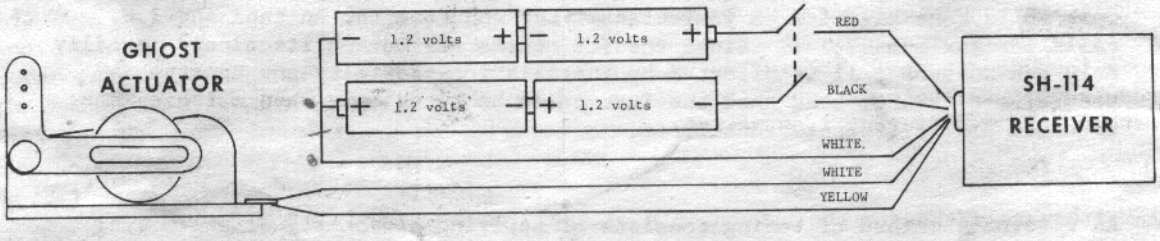
WARRANTY

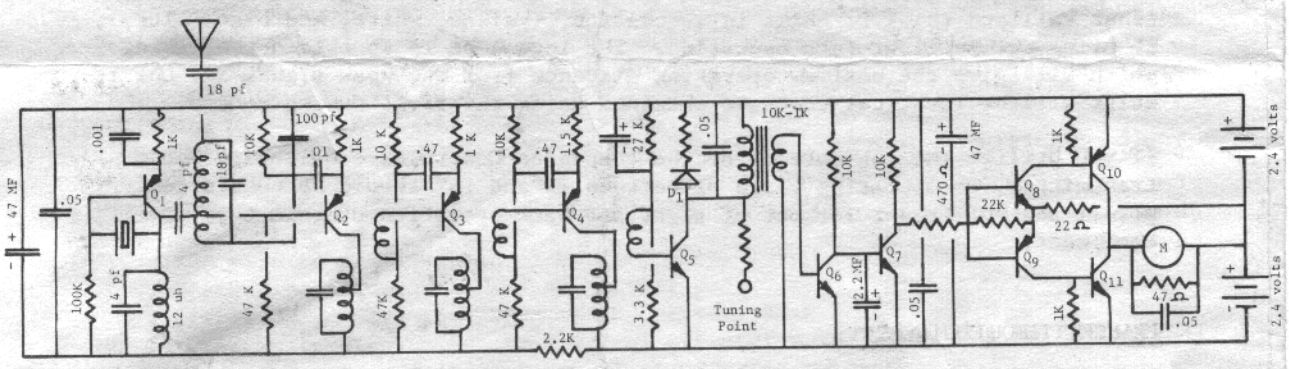
World Engines, Inc. guarantees this unit to be free of workmanship and parts defects for a period of 60 days from date of purchase. This is valid only if operated within the scope of instructions presented. We reserve the right of inspection to determine abuse or improper operation and, if evident in our opinion, guarantee is void. No responsibility is assumed for damage inflicted by shipping or handling organizations. When returning a unit for service under warranty, state this fact along with full particulars of why you think the unit is defective.

SERVICE

The minimum fee for inspection and repair of this unit is $4.50. Include this amount with the returned unit. If inspection reveals charges to be in excess of $10.00, you will be notified for approval of intended repair. Include all symptoms of malfunction to lessen our troubleshooting time and cost to you. Parts are quoted net and no dealer's discount is offered. In no case will repair exceed 50% of the original selling price. Print name and address, pack well, and attach or enclose letter of particulars in return carton. Allow two weeks for receipt, repair and return. Send repair work to CONTROLAIRE DIVISION, WORLD ENGINES, INC., 8960 Rossash Avenue, Cincinnati, Ohio 45236.

Do not return repair work to your dealer.





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